

# Dominguez-Escalante National Conservation Area

## Proposed Resource Management Plan & Final Environmental Impact Statement

### Volume 1: Executive Summary & Chapters 1–7



**NATIONAL  
CONSERVATION  
LANDS**

Dominguez-Escalante National Conservation Area • COLORADO





# **Dominguez-Escalante National Conservation Area Proposed Resource Management Plan & Final Environmental Impact Statement**

**BLM/CO/PL-16/009**

**Volume 1: Executive Summary & Chapters 1–7**

**Prepared by  
U.S. Department of the Interior  
Bureau of Land Management  
Dominguez-Escalante National Conservation Area  
Grand Junction, CO**

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# Dear Reader Letter



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Colorado State Office  
2850 Youngfield Street  
Lakewood, Colorado 80215-7210  
[www.co.blm.gov](http://www.co.blm.gov)



In Reply Refer To:  
1610-5.G.1.4 (CO-930)

JUN 22 2016

Dear Reader:

Enclosed are the Proposed Resource Management Plan (RMP) and Final Environmental Impact Statement (EIS) for the Dominguez-Escalante National Conservation Area (D-E NCA). The Bureau of Land Management (BLM) prepared the Proposed RMP/Final EIS in consultation with cooperating agencies, taking into account public comments received during this planning effort. The Proposed RMP provides a framework for the future management direction and appropriate use of the D-E NCA, which is located in Mesa and Delta counties, Colorado. The document contains both land use planning decisions and implementation decisions to guide the BLM's management of the D-E NCA.

The BLM developed this Proposed RMP/Final EIS in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended; and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended. The Proposed RMP is largely based on Alternative E, the Preferred Alternative in the Draft RMP/EIS, which was released on May 17, 2013. The Proposed RMP/Final EIS contains the Proposed Plan Alternative, a summary of changes made between the Draft RMP/EIS and Proposed RMP/Final EIS, impacts of the Proposed Plan Alternative, a summary of the written and verbal comments received during the public review period for the Draft RMP/EIS, and responses to the comments.

Pursuant to the BLM's planning regulations at 43 C.F.R. 1610.5-2, any person who participated in the planning process for this Proposed RMP and has an interest that is or may be adversely affected by the planning decisions may protest approval of the planning decisions within 30 days from the date the Environmental Protection Agency (EPA) publishes the Notice of Availability in the *Federal Register*. For further information on filing a protest, please see the accompanying protest regulations in the pages that follow (labeled as Attachment 1). The regulations specify the required elements of your protest. Take care to document all relevant facts. As much as possible, reference or cite the planning documents or available planning records (e.g., meeting minutes or summaries, correspondence, etc.).

Emailed protests will not be accepted as valid protests unless the protesting party also provides the original letter by either regular mail or overnight delivery postmarked by the close of the protest period. Under these conditions, the BLM will consider the emailed protest as an advance copy and will afford it full consideration. If you wish to provide the BLM with such advance notification, please direct emailed protests to [protest@blm.gov](mailto:protest@blm.gov).

All protests must be in writing and mailed to one of the following addresses:

Regular Mail:

Director (210)  
Attn: Protest Coordinator  
P.O. Box 71383  
Washington, DC. 20024-1383

Overnight Delivery:

Director (210)  
Attn: Protest Coordinator  
20 M Street SE, Room 2134LM  
Washington, DC. 20003

Before including your address, phone number, email address, or other personal identifying information in your protest, please be advised that your entire protest—including your personal identifying information—may be made publicly available at any time. While you can ask us in your protest to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

The BLM Director will make every attempt to promptly render a decision on each protest. The decision will be in writing and will be sent to the protesting party by certified mail, return receipt requested. The decision of the BLM Director shall be the final decision of the Department of the Interior on each protest. Responses to protest issues will be compiled and formalized in a Director's Protest Resolution Report made available following issuance of the decisions.

Upon resolution of all land use plan protests, the BLM will issue an Approved RMP and Record of Decision (ROD). The Approved RMP and ROD will be mailed or made available electronically to all who participated in the planning process and will be available on the BLM website at <http://www.blm.gov/co/st/en/nca/denca.html>.

Unlike land use planning decisions, implementation decisions included in this Proposed RMP/Final EIS are not subject to protest under the BLM planning regulations, but are subject to an administrative review process, through appeals to the Office of Hearings and Appeals, Interior Board of Land Appeals pursuant to 43 C.F.R., Part 4 Subpart E. Implementation decisions generally constitute the BLM's final approval, allowing on-the-ground actions to proceed. Where implementation decisions are made as part of the land use planning process, they are still subject to the appeal process or other administrative review as prescribed by specific resource program regulations once the BLM resolves the protests to land use planning decisions and issues an Approved RMP and ROD. The Approved RMP and ROD will therefore identify the implementation decisions made in the plan that may be appealed to the Office of Hearings and Appeals.

Sincerely,



Ruth Welch  
State Director

Attachment:

1 - Protest Regulations (1 p)

## **Protest Regulations**

[CITE: 43CFR1610.5-2]

TITLE 43--PUBLIC LANDS: INTERIOR  
CHAPTER II--BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR  
PART 1600--PLANNING, PROGRAMMING, BUDGETING--Table of Contents  
Subpart 1610--Resource Management Planning  
Sec. 1610.5-2 Protest procedures.

- (a) Any person who participated in the planning process and has an interest which is or may be adversely affected by the approval or amendment of a resource management plan may protest such approval or amendment. A protest may raise only those issues which were submitted for the record during the planning process.
  - (1) The protest shall be in writing and shall be filed with the Director. The protest shall be filed within 30 days of the date the Environmental Protection Agency published the notice of receipt of the final environmental impact statement containing the plan or amendment in the Federal Register. For an amendment not requiring the preparation of an environmental impact statement, the protest shall be filed within 30 days of the publication of the notice of its effective date.
  - (2) The protest shall contain:
    - (i) The name, mailing address, telephone number and interest of the person filing the protest;
    - (ii) A statement of the issue or issues being protested;
    - (iii) A statement of the part or parts of the plan or amendment being protested;
    - (iv) A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record; and
    - (v) A concise statement explaining why the State Director's decision is believed to be wrong.
  - (3) The Director shall promptly render a decision on the protest.
- (b) The decision shall be in writing and shall set forth the reasons for the decision. The decision shall be sent to the protesting party by certified mail, return receipt requested. The decision of the Director shall be the final decision of the Department of the Interior.

*Attachment 1*



# Abstract

Responsible agency: U.S. Department of the Interior, Bureau of Land Management (BLM)

Type of action: Administrative

Document status: Proposed RMP/Final EIS

Abstract: The Dominguez-Escalante National Conservation Area (D-E NCA) Proposed Resource Management Plan and Final Environmental Impact Statement (also simply referred to as the Proposed RMP or Proposed Plan) describes the ways in which the BLM proposes to manage 210,172 acres of Federal land surface and resources in western Colorado. The D-E NCA encompasses portions of Delta, Mesa, and Montrose Counties in the State of Colorado. This Proposed Plan synthesizes the results of almost four years of public scoping, D-E NCA Advisory Council (also simply referred to as the Advisory Council) and agency discussions, and public commentary. Text highlighted in gray (or in white if on a dark background) in the Proposed Plan denotes substantive changes from the Draft Resource Management Plan and Environmental Impact Statement (also simply called the Draft RMP), which was released for public comment from May 17, 2013, to September 23, 2013. The D-E NCA was designated in the Omnibus Public Land Management Act of 2009 and is a component of the BLM National Conservation Lands. Planning issues addressed in this Proposed RMP include the conservation and protection of the unique and important resources that were identified as purposes of the area's designation. Also addressed are continued uses of the area (including recreation, scientific research and education, livestock grazing, lands and realty, and travel and transportation management) and special designations such as areas of critical environmental concern (ACECs) and stream segments suitable for designation into the National Wild and Scenic Rivers System.

Protest period: The protest period is 30 days from the publication of the notice of availability for this document in the *Federal Register*.

For further information, please contact the NCA manager:

Collin Ewing  
NCA Manager  
Bureau of Land Management  
2815 H Road  
Grand Junction, CO 81506  
(970) 244-3049  
cewing@blm.gov

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# Commonly Used Acronyms

**ACEC** Area of Critical Environmental Concern

**ATV** All-Terrain Vehicle

**AUM** Animal Unit Month

**BLM** United States Department of the Interior, Bureau of Land Management

**BMP** Best Management Practice

**BOR** United States Department of the Interior, Bureau of Reclamation

**CEQ** Council on Environmental Quality

**CFR** Code of Federal Regulations

**CIAA** Cumulative Impact Analysis Area

**CNHP** Colorado Natural Heritage Program

**CPW** Colorado Parks and Wildlife

**CWCB** Colorado Water Conservation Board

**D-E NCA** Dominguez-Escalante National Conservation Area

**DOI** United States Department of the Interior

**EA** Environmental Assessment

**EIS** Environmental Impact Statement

**EPA** United States Environmental Protection Agency

**ERMA** Extensive Recreation Management Area

**ESA** Endangered Species Act of 1973

**°F** Degrees Fahrenheit

**FLPMA** Federal Land Policy and Management Act of 1976

**FRCC** Fire Regime Condition Class

**GIS** Geographic Information System

**GJFO** Grand Junction Field Office

**IDT** Interdisciplinary Team

**LHA** Land Health Assessment

**MOU** Memorandum of Understanding

**NEPA** National Environmental Policy Act of 1969  
**NHT** National Historic Trail  
**NHPA** National Historic Preservation Act of 1966  
**NLCS** National Landscape Conservation System  
**NOI** Notice of Intent  
**NRCS** U.S. Department of Agriculture Natural Resources Conservation Service  
**NRHP** National Register of Historic Places  
**NRLPI** Natural Resource and Land Policy Institute at Colorado Mesa University  
**NWSRS** National Wild and Scenic Rivers System  
**OHV** Off-Highway Vehicle  
**ORV** Outstandingly Remarkable Value  
**PEIS** Programmatic EIS  
**PFC** Properly (or Proper) Functioning Condition  
**PSD** Prohibit Surface Disturbance  
**RMA** Recreation Management Area  
**ROD** Record of Decision  
**ROW** Right-of-Way  
**RMP** Resource Management Plan  
**RSC** Recreation Setting Characteristic  
**SHPO** State Historic Preservation Office  
**SRMA** Special Recreation Management Area  
**SRP** Special Recreation Permit  
**SSR** Site-Specific Relocation  
**TL** Timing Limitation  
**UFO** Uncompahgre Field Office  
**USDA** United States Department of Agriculture  
**USFS** United States Forest Service  
**USFWS** United States Fish and Wildlife Service  
**USGS** United States Geological Survey

**VRM** Visual Resource Management

**WAFWA** Western Association of Fish and Wildlife Agencies

**WSA** Wilderness Study Area

**WSR** Wild and Scenic River

**WUI** Wildland-Urban Interface

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# Executive Summary

## Introduction

The United States Department of the Interior, Bureau of Land Management has prepared this **Proposed** Resource Management Plan and **Final** Environmental Impact Statement for the Dominguez-Escalante National Conservation Area. The BLM prepared this document in consultation with cooperating agencies, the D-E NCA Advisory Council, and the general public. This plan was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended; the Federal Land Policy and Management Act (FLPMA) of 1976, as amended; the D-E NCA's establishing legislation within the Omnibus Public Land Management Act of 2009; implemented regulations; BLM H-1601-1, *Land Use Planning Handbook* (BLM 2005); and other applicable laws and policies.

The D-E NCA planning area (also called simply the planning area) encompasses approximately 218,393 acres of private, State of Colorado and Federal surface lands in Mesa, Montrose, and Delta Counties, Colorado, situated between the communities of Grand Junction and Delta (see Table 1 and Map 1–1). The planning area consists of **210,172** acres of BLM-administered public land surface. This acreage number includes 209,610 acres designated in the Omnibus Act as well as **562** acres that were later acquired by the Federal Government (note that this acreage figure may vary throughout this document by up to 30 acres because of variability in the best available current survey information).

These BLM-administered lands comprise the D-E NCA decision area. The management guidelines in this Proposed RMP pertain only to BLM-administered land surface and not to private, State, or other Federal land surface. The D-E NCA encompasses the 66,280-acre Dominguez Canyon Wilderness (the Wilderness) (Map 1–2).

**Table 1. Surface Land Status of Planning Area by County (in Acres)**

Land Status	Mesa	Delta	Montrose	Total
BLM	120,118	59,718	30,315	210,172
State of Colorado	0	1,638	327	1,965
Private	3,003	3,101	173	6,256
Total	123,121	64,456	30,816	218,393

The BLM currently manages public lands within the D-E NCA in accordance with the 1987 Grand Junction RMP (BLM 1987), as amended, and the 1989 Uncompahgre Basin RMP (BLM 1989a), as amended. These lands are also administered in accordance with an approved interim management policy intended to ensure consistency with the Omnibus Act, as well as to avoid additional allocation of NCA resources during the interim period between designation and RMP completion. When the new RMP is completed, management of the D-E NCA will be guided exclusively by this new RMP and not through the BLM's RMP revisions for the Grand Junction Field Office (GJFO) or Uncompahgre Field Office (UFO).

## Purpose of and Need for This Plan

The purpose of this RMP/EIS is to provide for long-term conservation and protection of the “unique and important values” of the D-E NCA that were identified in the area's enabling legislation, the Omnibus Public Land Management Act of 2009, Public Law 111-11 (also referred

to hereafter as the Omnibus Act). These values include the “geological, cultural, archaeological, paleontological, natural, scientific, recreational, wilderness, wildlife, riparian, historical, educational, and scenic resources of the public lands, as well as the water resources of area streams, based on seasonally available flows, that are necessary to support aquatic, riparian, and terrestrial species and communities.” The Omnibus Act specified that these values be conserved and protected “for the benefit and enjoyment of present and future generations.”

In determining the suite of management actions necessary to protect, conserve, and provide for public enjoyment of the D-E NCA’s important resources over time, this plan responds to four important sources of overarching guidance:

- The portion of the Omnibus Act (Section 2402) that established the D-E NCA and provided guidelines for its management, specifically the direction to manage the area “in a manner that conserves, protects, and enhances the resources and values of the Conservation Area.”
- The portion of the Omnibus Act (Sections 2002 and 2405) that established the National Landscape Conservation System (NLCS) and provided a vision for how the components of this system should be managed, specifically the direction to “conserve, protect, and restore” the system’s components for the “benefit of current and future generations.” Subject to existing rights, the D-E NCA and Dominguez Canyon Wilderness were withdrawn from all location, entry and patent under mining laws and operation of mineral leasing, mineral materials, and geothermal leasing laws.
- The portion of the Wilderness Act of 1964 that governs the management of designated wilderness areas, including the Dominguez Canyon Wilderness, which was also established in the Omnibus Act (Section 2402) and that falls within the D-E NCA.
- The Federal Land Policy and Management Act of 1976, including the portion that established the concept of multiple use as the practice of managing “the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.”

In considering consistency between the Omnibus Act and FLPMA, Section 302 of the FLPMA states that public lands are to be managed under the principles of multiple use and sustained yield “except that where a tract of such public land has been dedicated to specific uses according to any other provisions of law it shall be managed in accordance with such law.”

Therefore, if management of the BLM’s multiple use and sustained yield mission conflicts with the Omnibus Act, the language provided within the Omnibus Act applies (BLM 2012b).

A new RMP is needed to ensure that the long-term management of these lands achieves a level of protection and conservation consistent with the legislative guidance described above.

The planning area is currently managed under two RMPs, the 1987 Grand Junction RMP (BLM 1987), as amended, and the 1989 Uncompahgre Basin RMP (BLM 1989a), as amended. Although the planning area has long been recognized for its outstanding resources and recreational values, a new plan is needed to ensure consistency across the D-E NCA. This new plan will ensure that the D-E NCA is managed as a single unit, rather than as a collection of individual resources, and will ensure that the BLM responds to its internal guidance, which states that all national conservation areas should have stand-alone land-use plans (BLM 2012b).

Other major issues contributing to the need for a new RMP include the following:

- Increased (and more varied) recreation demand due to population growth, demographic changes, and technological advances.
- Research advances in fields such as biology, ecology, geology, paleontology, hydrology, and archaeology.
- Increased demand for educational opportunities associated with public lands.

## **Planning Process and Public Collaboration**

An RMP provides broad guidance for managing public lands. The FLPMA directs the BLM to develop RMPs as the primary means to identify and allow for appropriate uses of public land. RMP decisions guide future land management actions and subsequent site-specific implementation decisions and help establish goals and objectives (desired outcomes) for resource management. In addition, measures necessary for achieving the outcomes are expressed as actions (proactive management techniques) and allowable uses (lands that are open or closed to certain uses), including any restrictions on uses.

This Proposed RMP was prepared in accordance with BLM planning regulations and guidance issued under authority of the FLPMA, as well as the Omnibus Act that established the D-E NCA and the Wilderness. During the RMP development process, an EIS was prepared in compliance with NEPA requirements and Council on Environmental Quality (CEQ) regulations for implementing NEPA; Title 40 of the Code of Federal Regulations (CFR), Parts 1500-1508; the BLM NEPA Handbook (BLM 2008a); and BLM H-1601-1, *Land Use Planning Handbook* (BLM 2005).

This Proposed RMP is the culmination of almost four years of collaborative effort and communication among BLM staff, local citizens, and local, State, tribal, and Federal agencies and organizations. An advisory council composed of 10 residents representing various communities and interests was established to assist the BLM in developing and implementing this Proposed RMP. The D-E NCA Advisory Council met 35 times prior to release of this Proposed RMP. Meetings were open to the public, with attendance ranging from 10 to over 60 people.

Other public involvement and outreach efforts in support of the planning process included the following:

- A series of community conversations preceding (Mesa State College 2007) and following (CMU 2011) NCA designation in March 2009, led by the Natural Resource and Land Policy Institute (NRLPI) at Colorado Mesa University. These reports are available online: <http://1.usa.gov/1qKkMVi>.

- Visitor surveys conducted by the NRLPI. The resulting report, *Dominguez-Escalante NCA Recreation Report 2010-2011* (CMU 2011) is available online: <http://1.usa.gov/1qKkMVi>.
- BLM press releases and monthly newsletters announcing major planning steps and providing updates regarding the planning effort.
- A BLM project website designed to provide current information to interested and affected members of the public (formerly at <http://www.blm.gov/co/st/en/nca/denca.html>; now at <http://1.usa.gov/1qKkMVi>).
- An independent stakeholder process (involving landowners, conservationists, recreationists, and business leaders), established to consider whether streams within the D-E NCA are suitable for inclusion in the National Wild and Scenic Rivers System.
- Socioeconomic workshops conducted by the BLM in Delta and Grand Junction, Colorado, during fall 2011.
- Workshops soliciting public input on travel management within the D-E NCA, conducted by the BLM in Delta and Grand Junction during fall 2010.
- Two open houses hosted by the BLM in Grand Junction and Delta following the release of the Draft RMP for public comment in May 2013, with combined attendance of approximately 100 people.
- Consultations with Ute tribal governments throughout the planning process
- Presentations by the BLM to highlight the Draft RMP alternatives, responding to interest of approximately 20 stakeholder groups. Conducted during the public comment period to facilitate effective public comments and engagement.

Following the 90-day comment period, which was subsequently extended an additional 30 days by public request, the BLM prepared this Proposed RMP to include the BLM's responses to public comments on the Draft RMP. The release of this Proposed RMP will initiate a 30-day protest period and 60-day governor's consistency review period. Following the resolution of any protests of planning decisions and issues identified during the Governor's Consistency Review, the BLM will issue a Record of Decision (ROD) and Approved RMP.

Chapter 2 of this Proposed RMP contains two levels of decisions: land-use-planning-level decisions and implementation-level decisions. Only land-use-planning-level decisions are protestable under the process outlined above. Implementation-level decisions are instead subject to various administrative remedies, to be clarified within individual decision documents at the time the BLM makes such decisions. The reader should assume that decisions within Chapter 2 of this Proposed RMP are land-use-planning-level decisions, unless these decisions are specifically labeled as "implementation actions." Specific examples of implementation-level decisions described within this Proposed RMP include route-by-route designations for comprehensive travel and transportation management (see section 1.4, Planning Process, of this Proposed RMP for further details). For more information on how to file a protest for the Proposed RMP, see the "Dear Reader Letter" at the front of this Proposed RMP.

Following the signing of the ROD, the BLM will issue supplementary rules through a *Federal Register* notice in order to implement the guidance provided by the Approved RMP.

## Management Alternatives

During the planning process, the BLM developed and studied alternative proposed actions, in compliance with BLM policies, Federal regulations, and NEPA requirements. Five potential management plans encompassing a broad range of resource uses in various combinations were developed to address planning issues. To be considered “reasonable,” an alternative must meet the identified purpose and need, offer a mix of resource protection, management use, and development, effectively respond to identified issues and planning criteria, and meet all Federal laws, regulations, and BLM policies. Input provided during public scoping and by BLM resource experts, along with guidance from enabling legislation, helped planners refine and formulate five alternatives, which were then analyzed for potential environmental impacts in the Draft RMP. Subsequently, public comments on the Draft RMP helped planners formulate the Proposed Plan Alternative, which replaces the Draft Preferred Alternative (Alternative E). A brief summary of each alternative follows. For further details, see Chapter 2 of this document.

### Alternative A (No Action Alternative)

Alternative A is the No Action Alternative. This alternative would continue current management direction and leave prevailing conditions under existing guidance and legislation, including the 1987 Grand Junction RMP, as amended; the 1989 Uncompahgre Basin RMP, as amended; the Omnibus Act; and the 2010 BLM Interim Management Policy for the D-E NCA and the Dominguez Canyon Wilderness. In cases where guidance from the Uncompahgre Basin or Grand Junction RMP conflicts with the language of the Omnibus Act (or the NCA Interim Management Policy derived from the Omnibus Act), the language of the Omnibus Act would prevail. Under this alternative, new management decisions (particularly those for livestock grazing and recreation) would not be made or would be deferred pending site-specific analysis. Alternative A is a valid course of action that has so far resulted in the continued presence of the unique and important resources of the D-E NCA. However, this alternative no longer meets the area’s management purposes and needs.

Under Alternative A, all eligible wild and scenic river (WSR) segments would remain eligible for WSR designation. No national trail management corridor would be established for the Old Spanish National Historic Trail (NHT). The two ACECs in Escalante Canyon and the Gunnison Gravels would remain designated. All existing travel routes, except those that have already been closed because of previous management decisions, would be designated and available for public use.

### Alternative B

Under Alternative B, the BLM would implement few active management techniques to address resource issues within the D-E NCA, instead relying on natural processes and restriction of allowable uses to conserve and protect NCA resources. Although resources would not be managed through active techniques, the health of some biological resources would be expected to improve over time as a result of certain restrictions. Wilderness would be managed with an emphasis on untrammeled wilderness values and opportunities for primitive and unconfined recreation. Recreation would be managed under an extensive recreation management area (ERMA) approach, where the BLM would commit to providing opportunities for certain activities but not specific recreational outcomes or settings. This alternative would restrict livestock grazing the most.

Under Alternative B, portions of the Gunnison River and Cottonwood Creek would be managed as suitable for WSR designation. A 23,131-acre trail corridor would be established for the Old Spanish National Historic Trail. ACEC designations would be dropped, and no new designations would be sought. Travel routes that conflict with resource protection goals, as well as redundant and dead-end routes, would be closed and allowed to naturally rehabilitate.

## **Alternative C**

Under Alternative C, the BLM would actively manage for biological restoration and cultural resource protection. A variety of vegetation treatments (e.g., mechanical treatments, prescribed fire, site rehabilitation) would be used to achieve ambitious biological objectives. Management of the Wilderness would emphasize the wilderness values of naturalness, supplemental wilderness values, and outstanding opportunities for solitude. Two areas within the D-E NCA would be managed as non-motorized special recreation management areas (SRMAs). The rest of the D-E NCA would not have specific recreational objectives and would be restricted as necessary to meet resource objectives. Livestock grazing would be intensively managed to help improve the condition of biological resources.

All eligible WSR segments would be managed as suitable for WSR designation. A 23,131-acre trail corridor would be established for the Old Spanish National Historic Trail. The BLM would designate two new ACECs and continue management of the Escalante Canyon ACEC. A large number of travel routes would be closed to reduce conflicts with resource protection goals, and closed routes would be rehabilitated to return them to a more natural state.

## **Alternative D**

Under Alternative D, the BLM would commit to trail-based recreation and specific recreational outcomes and settings (SRMA-style management). The BLM would designate nine new SRMAs, including two motorized trail-based SRMAs and two non-motorized trail-based SRMAs. In managing natural and biological resources, the BLM would focus on active restoration, but goals would be less ambitious than with Alternative C. The Wilderness would be split into three management zones with different management emphases. Livestock grazing would be managed similarly to under Alternative A, with more lands opened for livestock grazing than are currently allocated.

Under Alternative D, all eligible WSR segments would be dropped from suitability consideration. A 23,131-acre trail corridor would be established for the Old Spanish National Historic Trail. The BLM would designate two new ACECs and expand both existing ACECs to protect sensitive resources in areas where impacts from recreational use would be expected to increase. The route system of the D-E NCA would be designated to provide high-quality recreational experiences, while still ensuring protection of resources. Redundant and dead-end routes would be closed and rehabilitated to return them to a more natural state.

## **Proposed Plan Alternative**

The Proposed Plan Alternative is based upon the Draft Preferred Alternative, which was largely a blend of management approaches already considered under other alternatives, as well as on the basis of the Draft EIS completed for Draft Alternatives A through E. Management actions unique to the Proposed Plan Alternative were crafted in response to public comments on the Draft

RMP. Public comments often identified opportunities to better resolve conflicts or impacts or expressed the need for greater clarity. In the Chapter 2 matrix of management actions, the BLM has indicated which actions are the same as in the Draft Preferred Alternative and which are not.

As with the Draft Preferred Alternative, the Proposed Plan Alternative would set objectives for biological resources that are more ambitious than those in Alternative D but less ambitious than those in Alternative C. As with Alternatives C and D, a wide range of tools would be available to achieve these objectives. Management of the Wilderness would be similar to management under Alternative D, with each of three zones managed with a different emphasis. Livestock grazing management would include components of both Alternatives C and D. Regarding recreation management, the BLM would designate three SRMAs. Much of the rest of the D-E NCA outside of the Wilderness would be designated as ERMAs.

Under the Proposed Plan Alternative, one WSR segment on Cottonwood Creek would be managed as suitable for WSR designation, two new ACECs would be established, and the BLM would continue to manage two existing ACECs. A 23,131-acre trail corridor would be established for the Old Spanish National Historic Trail. The second largest number of miles of routes would be open to the public under the Proposed Plan Alternative (second only to Alternative A).

## **Affected Environment**

The chapter on the affected environment (Chapter 3) describes the current condition of resources and resource uses within the D-E NCA, serving as a baseline for predicting the impacts described in the chapter on environmental consequences (Chapter 4). Much of the information presented in this chapter is similar to information assembled for the *Analysis of the Management Situation* (BLM 2011a), which was posted on the D-E NCA RMP website in July 2011 (formerly at <http://www.blm.gov/co/st/en/nca/denca.html>; now at <http://1.usa.gov/1qKkMVi>).

## **Environmental Consequences**

The purpose of the environmental consequences analysis in this Proposed RMP is to determine the potential for the Federal action to have significant impacts on the D-E NCA's human environment. CEQ regulations for implementing NEPA state that the "human environment" is to be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment (40 CFR, part 1508.14). The "Federal action" in this case is the BLM's selection of this RMP as the basis for future actions in the D-E NCA.

Chapter 4 objectively evaluates the probable direct, indirect, and cumulative impacts on the human and natural environment in terms of the environmental, social, and economic consequences that are projected to occur from implementing each of the five alternatives analyzed in detail (Alternatives A through D and the Proposed Plan Alternative).

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# **Chapter 1. Introduction**

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## Overview

The United States Department of the Interior, Bureau of Land Management has prepared this **Proposed** Resource Management Plan and **Final** Environmental Impact Statement for the Dominguez-Escalante National Conservation Area. The BLM prepared this document in consultation with cooperating agencies, the D-E NCA Advisory Council and the general public. This plan was prepared in accordance with the National Environmental Policy Act of 1969 as amended; the Federal Land Policy and Management Act of 1976 as amended; the D-E NCA's establishing legislation within the Omnibus Public Land Management Act of 2009; implementing regulations; BLM H-1601-1, *Land Use Planning Handbook* (BLM 2005); and other applicable law and policy.

There is a broad range of information to be found in the Proposed RMP. Diagram 1 below shows the main components of the plan (with clickable links in the electronic version of this document).

Diagram 1. Summary of Chapters in This Proposed RMP	
<p><b>Chapter 1. Introduction</b></p> <p>Summarizes the proposed action, the purpose and need for the action, and the BLM's decisions in the Proposed RMP.</p> <p><b>Chapter 2. Alternatives</b></p> <p>Describes and compares the proposed management alternatives.</p> <p><b>Chapter 3. Affected Environment</b></p> <p>Presents existing biological, physical, and socioeconomic resources that could be affected by implementing the proposed management alternatives.</p> <p><b>Chapter 4. Environmental Consequences</b></p> <p>Evaluates the impacts of the proposed management alternatives on the human and natural environment in terms of environmental, social, and economic consequences projected to occur from implementing the alternatives.</p> <p><b>Chapter 5. Consultation and Coordination</b></p> <p>Describes the scoping and public comment process, the role and recommendations of the Advisory Council, cooperating agency participation, and government-to-government consultation.</p> <p><b>Chapter 6. References</b></p> <p><b>Chapter 7. Glossary</b></p> <p><b>APPENDICES</b></p> <p>Appendix A. Planning for Priority Species and Vegetation</p>	<p><b>APPENDICES cont'd</b></p> <p>Appendix E. Raptor Species Breeding Periods</p> <p>Appendix F. Colorado Noxious Weed List</p> <p>Appendix G. Naturalness in the Dominguez Canyon Wilderness</p> <p>Appendix H. Minimum Requirements Decision Guide Overview</p> <p>Appendix I. Special Recreation Permit Program Overview</p> <p>Appendix J. Best Management Practices for Management Actions</p> <p>Appendix K. <b>Trail Design Criteria</b></p> <p>Appendix L. Special Recreation Management Area Recreation Setting Descriptions</p> <p>Appendix M. Evaluation of Proposed and Existing Areas of Critical Environmental Concern</p> <p>Appendix N. Comprehensive Travel and Transportation Management Plan</p> <p>Appendix O. Wild and Scenic River Suitability Report</p> <p>Appendix P. Air Resources</p> <p>Appendix Q. Omnibus Public Land Management Act of 2009 (Subtitle E—Dominguez-Escalante National Conservation Area)</p> <p>Appendix R. Maps Cited in the Proposed RMP</p> <p><b>Appendix S. Economic Impact Analysis Methodology</b></p>

Diagram 1. Summary of Chapters in This Proposed RMP	
Appendix B. Description of Surface Disturbance Restrictions	Appendix T. Conservation Measures for Listed Plant Species in the D-E NCA
Appendix C. Modeling the Probability of Bighorn/Domestic Sheep Association	Appendix U. The BLM's Responses to Public Comments
Appendix D. Colorado Standards for Public Land Health	Appendix V. BLM Manual 6220 – National Monuments, National Conservation Areas, and Similar Designations

## 1.1. Purpose of and Need for the Plan

The purpose of this RMP/EIS is to provide for long-term conservation and protection of the “unique and important values” of the D-E NCA that were identified in the area’s enabling legislation: the Omnibus Public Land Management Act of 2009, Public Law 111-11. These values include the “geological, cultural, archaeological, paleontological, natural, scientific, recreational, wilderness, wildlife, riparian, historical, educational, and scenic resources of the public lands, as well as the water resources of area streams, based on seasonally available flows, that are necessary to support aquatic, riparian, and terrestrial species and communities.” The Omnibus Act specified that these values be conserved and protected “for the benefit and enjoyment of present and future generations.” Furthermore, in recognition of the historic and current traditional use of the NCA area for livestock grazing, the Omnibus Act specifically stated that the BLM “shall issue and administer any grazing leases or permits in the Conservation Area in accordance with the laws (including regulations) applicable to the issuance and administration of such leases and permits on other land under the jurisdiction of the Bureau of Land Management.”

In determining the suite of management actions necessary to protect, conserve, and enjoy the D-E NCA’s important resources and manage its uses over time, this plan responds to four important sources of overarching guidance:

- The portion of the Omnibus Act (Section 2402) that established the D-E NCA and provided guidelines for its management, specifically the direction to manage the area “in a manner that conserves, protects, and enhances the resources and values of the Conservation Area.”
- The portion of the Omnibus Act (Section 2002) that established the National Landscape Conservation System and provided a vision for how the components of this system should be managed, specifically the direction to “conserve, protect, and restore” the system’s components for the “benefit of current and future generations.”
- The portion of the Wilderness Act of 1964 that governs the management of designated Wilderness Areas, including the Dominguez Canyon Wilderness, which was also established in the Omnibus Act (Section 2402) and falls within the D-E NCA.
- The Federal Land Policy and Management Act of 1976, including the portion that established the concept of multiple use as the practice of managing

the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than

all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.

In considering consistency between the Omnibus Act and FLPMA, Section 302 of FLPMA states that public lands are to be managed under the principles of multiple use and sustained yield “except that where a tract of such public land has been dedicated to specific uses according to any other provisions of law it shall be managed in accordance with such law.” Therefore, if management of the BLM’s multiple use and sustained yield mission conflicts with the Omnibus Act, the language provided within the Omnibus Act applies (BLM 2012b).

Recognizing these purposes, a new RMP is needed to ensure that the long-term management of these lands achieves a level of protection and conservation consistent with the legislative guidance described above.

The planning area is currently managed under two RMPs: the 1987 Grand Junction RMP (BLM 1987) as amended and the 1989 Uncompahgre Basin RMP (BLM 1989a) as amended. Although the planning area has long been recognized for its outstanding resource and recreational values, a new plan is needed to ensure consistency across the D-E NCA. This new plan will ensure that the D-E NCA is managed as a single unit, rather than as a collection of individual values, and will ensure that the BLM responds to its internal guidance that all national conservation areas have stand-alone land use plans (BLM 2012b).

Other major issues contributing to the need for a new RMP include the following:

- Increased (and more varied) recreation demand due to population growth, demographic changes, and technological advances.
- New information in fields such as climate science, biology, ecology, geology, paleontology, hydrology and archaeology.
- Increased demand for educational opportunities associated with public lands.

## 1.2. Description of the Planning Area

The planning area for this Proposed RMP consists of 210,172 acres of BLM-administered public land surface, 6,256 acres of private land surface, and 1,965 acres of State of Colorado land surface in Mesa, Montrose, and Delta Counties, Colorado (as shown in Table 1.1 below and Map 1–1). The acreage number for BLM-administered public land surface includes 209,610 acres designated in the Omnibus Act, as well as 562 acres that were subsequently acquired by the Federal Government (note that this reported acreage figure may differ throughout the document by up to 30 acres because of variability in the best available current survey information). This acquisition, known as the American Mountain Men acquisition, occurred during the development of this RMP. Although not shown as public land on maps found in this RMP, the intent for the

American Mountain Men acquisition lands is, under any alternative, to manage them similarly to the surrounding lands. Corrections to maps for these lands would be done under plan maintenance after the signing of the Record of Decision.

The decision area for this Proposed RMP includes only the BLM-administered surface lands (see Table 1.1 below and Map 1–2). The planning area includes some split-estate lands, where surface ownership differs from subsurface ownership. Within the planning area, the Federal Government owns surface lands but does not fully own the subsurface (mineral) estate on approximately 800 acres (0.4 percent of the planning area) (see differences between Table 1.1 and Table 1.2 below, and Map 1–2). Also, the Federal Government owns the subsurface (mineral) estate on 134 acres of privately held land surface (0.1 percent of the planning area). Due to the withdrawals written into the Omnibus Act that preclude Federal mineral development within the D-E NCA, split-estate public subsurface/private surface lands are not discussed in detail within this document.

The Omnibus Act withdrew the D-E NCA from

1. all forms of entry, appropriation, or disposal under the public land laws; 2. location, entry, and patent under the mining laws; and 3. operation of the mineral leasing, mineral materials, and geothermal leasing laws.

This withdrawal was subject to valid existing rights that predate the Omnibus Act. There is one existing mining claim in the D-E NCA, which is located upstream of Rattlesnake Gulch along the Gunnison River. The holder of this claim has legal right to access, explore, and mine. All other claims that were in existence prior to the Omnibus Act have since expired.

**Table 1.1. Surface Land Status of Planning Area by County (in Acres)**

Surface Land Status	Mesa	Delta	Montrose	Total
Public Land (BLM)	120,118	59,718	30,315	210,172
State of Colorado	0	1,638	327	1,965
Private	3,003	3,101	173	6,256
Total	123,121	64,456	30,816	218,393

**Table 1.2. Subsurface Land Status of Planning Area by County (in Acres)**

Subsurface Land Status	Mesa	Delta	Montrose	Total
Federal (BLM)	120,252	59,718	29,410	209,380
Non-Federal	2,869	4,739	1,405	9,013
Total	123,121	64,456	30,816	218,393

The southwest boundary of the planning area borders the Uncompahgre National Forest. The northwest boundary runs along Colorado Highway 141 (between the towns of Whitewater and Gateway) and includes approximately 10 miles of the Tabeguache-Unawee Scenic and Historic Byway. The northeastern boundary is defined by U.S. Highway 50 and adjacent private lands, while the southeastern boundary is defined by Delta-Nucla (25 Mesa) Road, which runs south to the National Forest boundary.

The planning area lies within the Colorado Plateau and Southern Rocky Mountains physiographic provinces. Elevations within the planning area range from approximately 4,700 feet to over 8,200 feet above sea level, resulting in great biological and topographical diversity. The Colorado Plateau portion is characterized by sedimentary surface deposits dominated by deep canyons, while lower elevation mesas are predominantly characterized by deposits of sandstone and shale.

The Dominguez Canyon Wilderness (the Wilderness) is characterized by large mesas dissected by deep red slickrock canyons and arroyos. The Wilderness consists of an array of ecosystems, ranging from salt desert shrub vegetation nearest the Gunnison River, to mid-elevation pinyon-juniper woodlands, to aspen and Douglas-fir forests at higher elevations. This wilderness area possesses outstanding geological features and ecological diversity, spectacular scenery that includes two cascading mountain streams, and habitat that supports a wide range of wildlife (including collared lizards, desert bighorn sheep, mountain lions, golden eagles, and peregrine falcons).

The lower Gunnison River runs through the planning area between the towns of Delta and Whitewater. The river is popular with both commercial and private boaters for overnight camping and boating and also contains critical habitat for sensitive native fish. The planning area includes segments of the congressionally designated Old Spanish National Historic Trail. Special features of the planning area include two previously designated ACECs. The Escalante Canyon ACEC consists of approximately 1,895 acres designated for sensitive plant species, natural seeps, and several globally unique plant associations, including beautiful hanging gardens of small-flowered columbine and Eastwood's monkey-flower (*Mimulus eastwoodiae*). The five-acre Gunnison Gravels ACEC was designated to protect the scientific and educational values associated with a fluvial gravel deposit that suggests the location of an ancestral river in Unaweep Canyon. The D-E NCA also provides for a number of different types of dispersed recreation opportunities in highly scenic areas such as the Gunnison River, Escalante Canyon and Cactus Park.

The decision area for this planning project includes only the BLM-administered land within the D-E NCA boundary, and does not include any private inholdings within the D-E NCA's boundaries or State of Colorado lands (Map 1–2).

### 1.3. Overall Vision

The overall vision for management of the planning area is informed by the Omnibus Act. As noted in section 1.1, Purpose of and Need for the Plan, the D-E NCA is to be managed in a manner that conserves, protects, and enhances the resources and values of the Conservation Area, in accordance with FLPMA (43 U.S.C. 1701 et seq.), the Omnibus Act, and any other applicable laws. In accordance with the Omnibus Act, only those uses that “further the purposes for which the Conservation Area is established” shall be allowed (Sec. 2402(c)(A)).

Section 302 of FLPMA states that public lands are to be managed under the principles of multiple use and sustained yield “except that where a tract of such public land has been dedicated to specific uses according to any other provisions of law it shall be managed in accordance with such law.” Therefore, where management of the BLM's multiple use and sustained yield mission conflict with the Omnibus Act, the language provided within the Omnibus Act applies (BLM 2012b).

The National Landscape Conservation System was established by Congress in 2009 through the Omnibus Act in order to conserve, protect, and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations. Lands within this system are called National Conservation Lands.

The Omnibus Act also established the Dominguez Canyon Wilderness within the D-E NCA as a component of the National Wilderness Preservation System. Nearly all of the land established as the Wilderness was previously part of the Dominguez Canyon Wilderness Study Area (WSA).

Under the Wilderness Act of 1964 (16 U.S.C. 1131 et seq.), the National Wilderness Preservation System was established

in order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition. It is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness... and these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness (Sec. 2(a)).

## Old Spanish National Historic Trail

In 2002, Congress amended the National Trails System Act by designating the Old Spanish NHT, a portion of which runs the length of the NCA's eastern boundary. Under the National Trails System Act of 1968, as amended (16 U.S.C. 1241-1251), the National Trails System was established "in order to provide for the ever-increasing outdoor recreation needs of an expanding population and in order to promote the preservation of, public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas and historic resources of the Nation, trails should be established (i) primarily, near the urban areas of the Nation, and (ii) secondarily, within scenic areas and along historic travel routes of the Nation which are often more remotely located. It is further the purpose of this Act to encourage and assist volunteer citizen involvement in the planning, development, maintenance, and management...of trails" (Sec. 2(a)(c)). The BLM's management vision for the Old Spanish NHT is guided by this Act as well as by public and D-E NCA Advisory Council input and BLM Manuals 6250 and 6280 (BLM 2012g). The BLM and NPS, as joint administrators of the Old Spanish NHT, are developing a comprehensive administrative strategy (CAS) that will guide administration of the NHT. The management actions in this RMP will be reviewed for consistency with the final CAS, when approved.

## 1.4. Planning Process

RMPs provide broad guidance for managing public lands. FLPMA directs the BLM to develop RMPs as the primary means to identify and allow for appropriate uses of public land. RMP decisions guide future land management actions and subsequent site-specific implementation decisions and help establish goals and objectives (desired outcomes) for resource management. In addition, measures necessary for achieving the outcomes are expressed as actions (proactive management techniques) and allowable uses (lands that are open or closed to certain uses), including any stipulations or restrictions on uses.

This Proposed RMP was prepared in accordance with BLM planning regulations and guidance issued under authority of FLPMA, as well as the Omnibus Act that established the D-E NCA and the Wilderness. Within the Proposed RMP, an EIS was prepared in accordance with requirements of the National Environmental Policy Act of 1969 (NEPA), CFR 1500-1508, BLM NEPA Handbook (BLM 2008a), and BLM H-1601-1, *Land Use Planning Handbook* (BLM 2005).

This Proposed RMP is the culmination of over two years of collaborative effort and communication among BLM staff, local citizens, and local, State, tribal, and Federal agencies and organizations. An advisory council, composed of 10 residents representing various communities



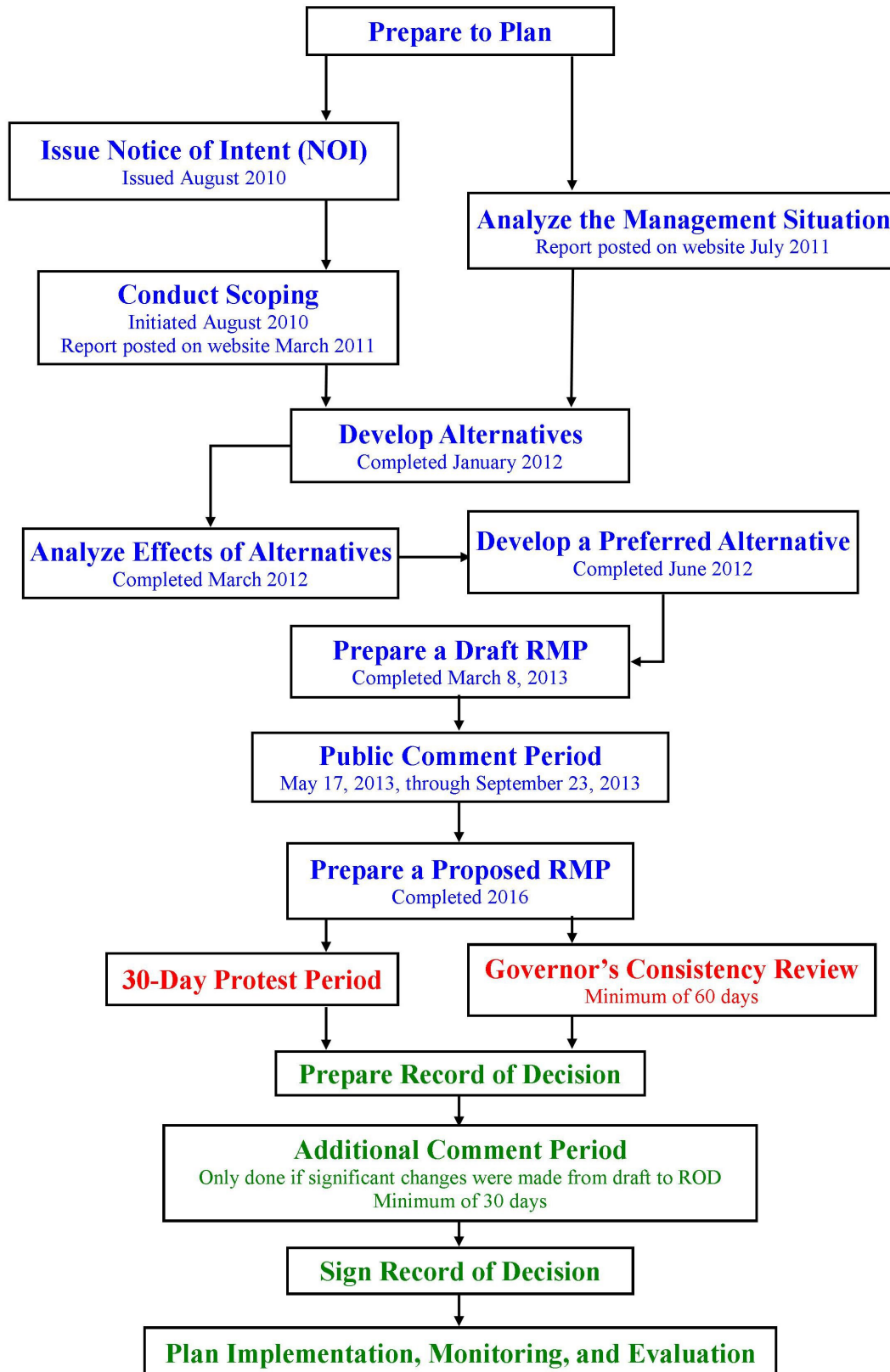
and interests throughout the surrounding three-county area, was established to assist the BLM in developing and implementing this Proposed RMP. The D-E NCA Advisory Council met 35 times prior to release of this Proposed RMP. Meetings were open to the public, with attendance ranging from 10 to over 60 members of the public. The Council's recommendations are further detailed in section 1.7, Collaboration.

Other public involvement and outreach efforts in support of the planning process included the following:

- A series of community conversations preceding (Mesa State College 2007) and following (CMU 2011) NCA designation in March 2009, led by the Natural Resource and Land Policy Institute at Colorado Mesa University. These reports are available online: <http://1.usa.gov/1qKkMVi>.
- Visitor surveys conducted by the NRLPI. The resulting report (CMU 2011) is available online: <http://1.usa.gov/1qKkMVi>.
- BLM press releases and monthly newsletters announcing major planning steps and providing updates regarding the planning effort.
- A BLM project website designed to provide current information to interested and affected members of the public (formerly at <http://www.blm.gov/co/st/en/nca/denca.html>; now at <http://1.usa.gov/1qKkMVi>).
- An independent stakeholder process (involving landowners, conservationists, recreationists, and business leaders) established to consider whether streams within the D-E NCA are suitable for inclusion in the National Wild and Scenic Rivers System.
- Socioeconomic workshops conducted by the BLM in Delta and Grand Junction, Colorado during fall 2011.
- Workshops soliciting public input on travel management within the D-E NCA, conducted by the BLM in Delta and Grand Junction, Colorado during fall 2010.

The BLM initiated a 90-day public comment period immediately following the public release of the Draft RMP, which was subsequently extended by 45 days. The public submitted comments electronically through the BLM's ePlanning website, by email, fax, regular mail, and submitted written comments at Advisory Council meetings, the BLM's public open house meetings, and at the BLM Uncompahgre and Grand Junction Field Offices. The public's role in shaping the Proposed Plan Alternative is further detailed in section 1.9, Public Comments on the Draft RMP.

Following this public comment period, the BLM prepared a Proposed RMP, which includes the BLM's responses to public comments on the Draft RMP. The release of this Proposed RMP initiates a 30-day protest period and 60-day Governor's Consistency Review period. Following the resolution of any protests of planning decisions and issues identified during the Governor's Consistency Review, the BLM will issue a Record of Decision (ROD)/Approved RMP. Figure 1.1 below shows the steps in the development of the D-E NCA RMP.



**Figure 1.1. Steps in D-E NCA RMP Development**

## Implementation-Level Decisions

This Proposed RMP describes broad decisions dealing with proposed management actions, special designations, and allowable uses. These types of decisions are called *planning-level decisions*, and they are the majority of decisions within this Proposed RMP. *Implementation-level decisions* are tied to a specific location and are used to implement planning-level decisions. Appendix C in the BLM Handbook H-1601-1 (BLM 2005) provides program-specific guidance to separate land use plan decisions from implementation decisions.

Most implementation-level decisions are developed following adoption of an RMP with subsequent, site-specific environmental analyses. However, in some cases, implementation decisions are made within this Proposed RMP. Where these implementation decisions are described in Chapter 2, they are specifically labeled as “implementation actions.” When implementation-level decisions are included in the impact analysis for an RMP, further NEPA analysis is not required to begin implementing these decisions. Route designations in the D-E NCA Comprehensive Travel and Transportation Management Plan (Appendix N) are implementation-level decisions.

Subsequent management actions taken by the BLM to implement the guidance found within this RMP may be based on the impact analysis done within this document (BLM 2008a). This allows the BLM to narrow the focus of subsequent implementation-level environmental assessments (EAs), because implementation-level EAs need not reanalyze effects that were already fully analyzed in the broader RMP. Instead, the analysis for the implementation-level EA may focus on the effects of the individual action that were not covered within the RMP.

With respect to the public process, only land use planning-level decisions are protestable under the process outlined above. Implementation-level decisions are instead subject to various administrative remedies, to be clarified within individual decision documents at the time the BLM makes such decisions. . The reader should assume that decisions within Chapter 2 of this Proposed RMP are land use planning-level decisions unless these decisions are specifically labeled as “implementation actions.”

## 1.5. Scoping and Planning Issues

### Scoping

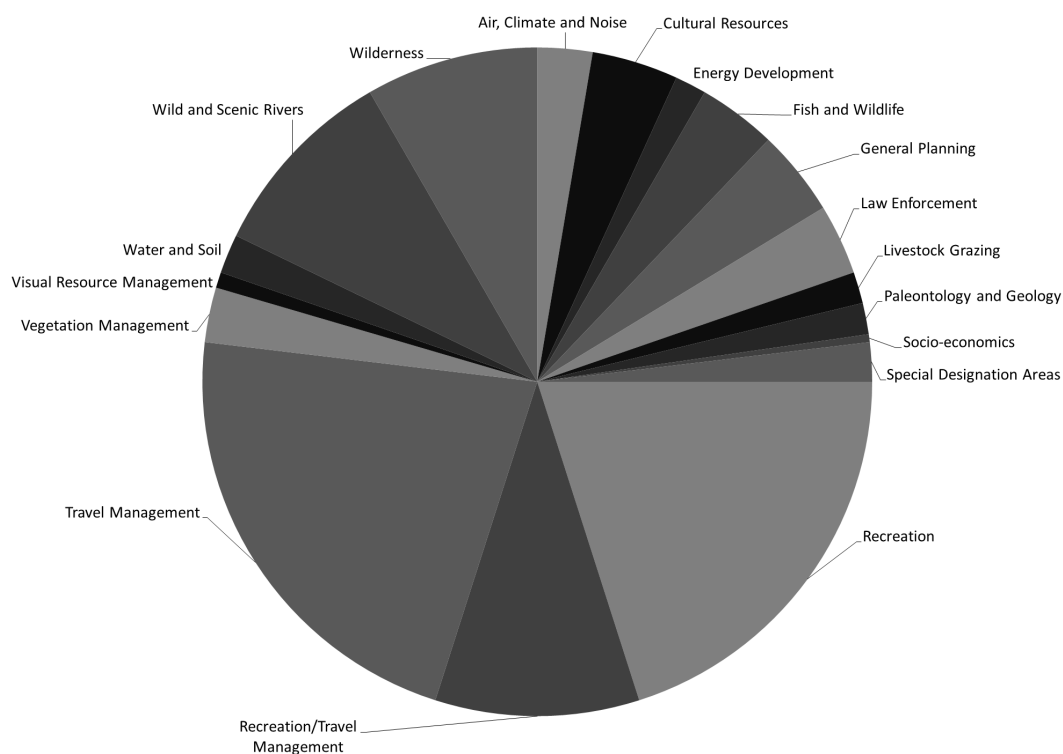
The formal public scoping process for the D-E NCA RMP began on August 3, 2010, with the publication of a notice of intent (NOI) in the *Federal Register*. This scoping period lasted through October 1, 2010. Public outreach during this scoping period included two open houses, a press release and information fliers posted in retail businesses and centers catering to outdoor recreation and BLM information kiosks. Notices of the scoping meetings were also emailed to interested individuals and posted on the BLM’s D-E NCA website (formerly at <http://www.blm.gov/co/st/en/nca/denca.html>; now at <http://1.usa.gov/1qKkMVi>).

The BLM received 66 unique emails, letters and comment forms during the public scoping period. Over 2,000 identical form letters were received, which were treated as one letter.

Individual comments were identified within each submission, and categorized according to their relevance to the D-E NCA RMP. Comments that addressed a planning issue were then further

categorized, coded, entered into a database, and analyzed. Additional comments of relevance to the D-E NCA RMP that were received during scoping for RMP revisions in the Grand Junction and Uncompahgre Field Offices were included at this time as well.

In total, the BLM identified 264 planning issue comments, which were then further analyzed. Of the 264 comments, 95 came from unaffiliated individuals, 14 came from public agencies, 13 came from businesses, nine came from form letters and 133 came from nonprofit or citizen's groups. No written submissions were received from tribal governments or elected officials. Non-substantive comments (e.g., those that did not address issues within the planning area or those that addressed issues outside the jurisdiction of the BLM) were not included. The BLM used planning issue comments in the development of the alternatives for the Draft RMP. Figure 1.2 below shows the number of planning issue comments received during public scoping by issue category.



**Figure 1.2. Categories of Comments Received during D-E NCA Public Scoping**

## Planning Issues Addressed in the Draft RMP

The process for developing, amending, or revising an RMP begins with identifying issues and management concerns (40 CFR 1501.7; 43 CFR 1610.4-1). Generally, a planning issue is a point of conflict or dispute over resource management activities, allocations, and/or land use associated with the management of public lands. Issues may reflect new data, new or revised policies, and/or changes in resource uses that may affect the planning area. In contrast, management concerns are topics or points of dispute that involve a resource management activity and/or land use. Generally, management concerns are more important to individuals or small groups, as opposed to a planning issue that may have more widespread public interest.

*Internal* (BLM staff) and *external* (general public and interest groups) scoping uncovered a great many overlapping issues.

From the Omnibus Act, two overarching questions were initially identified as core planning issues for this RMP:

1. What decisions are necessary to conserve and protect the unique and important resources and values of the D-E NCA, including the geological, cultural, archaeological, paleontological, natural, scientific, recreational, wilderness, wildlife, riparian, historical, educational, and scenic resources of the public land?
2. What decisions are necessary to conserve and protect the water resources of area streams, based on seasonally available flows, and support aquatic, riparian and terrestrial species and communities?

In addition, the following more specific issues were identified through internal and external scoping:

1. **Geological and Paleontological Resources:** What is the appropriate mix between information/education and protection/preservation for the paleontological resources in this area?
2. **Vegetation and Soils:** What role should fire play in the D-E NCA and the Wilderness? What treatments are necessary to reduce impacts associated with fire, insects, non-native/invasive species and disease? What goals, objectives, and management actions, including desired future conditions and land restoration priorities, are necessary to continue progress toward achieving land health standards? Should the area continue to be available for existing uses, and if so, what criteria should be established to ensure that these uses further the purposes for which the D-E NCA was established? What areas of especially fragile soils will need special attention?
3. **Wildlife and Terrestrial Habitat:** Where is special management needed to restore, maintain, or enhance priority species (including special status species) and their habitats? How should uses, including recreation, grazing, and motorized and mechanized vehicle use, be managed to conserve, protect and enhance wildlife (including special status species) and their habitats?
4. **Aquatic, Wetlands and Riparian Areas, and Water Resources:** What goals, objectives and management priorities, including desired future conditions and riparian and aquatic restoration priorities, are necessary to ensure that these water resources are of sufficient quality and quantity to support aquatic, riparian, and terrestrial species and communities? What additional water rights and instream flow protections, if any, are needed to maintain and enhance the aquatic and riparian resources that were referenced in the legislation?
5. **Cultural Resources:** How should the cultural resources and archaeological values (prehistoric and historic) of the area be protected and preserved, while still allowing for appropriate information/education efforts? What areas within the larger landscape are considered by Native Americans to be sacred sites or landscapes, and what management measures are needed to ensure that traditional uses are able to occur and sites are protected?
6. **Wilderness:** How will the Wilderness be managed to protect wilderness values and provide outstanding opportunities for solitude and/or primitive and unconfined recreation? How

will grazing activities, including maintenance and construction of rangeland improvement facilities, be managed to protect wilderness values? What use levels would provide those experiences and outcomes while still protecting wilderness values in the Wilderness?

7. **Lands with Wilderness Characteristics:** What lands, if any, should be managed to prioritize protection of wilderness values outside of the existing Wilderness and wilderness study areas? How might the BLM otherwise manage lands with wilderness characteristics (outside of existing Wilderness and WSAs) to preserve inventoried wilderness characteristics?
8. **Visual Resources:** Which visual resource management (VRM) classes will provide adequate protection for the scenic resources and visual quality of the D-E NCA?
9. **Air Resources (Air, Climate, and Noise):** What effects might a changing climate have on the resources in the planning area, and how would the resource management approach respond? Which reasonably foreseeable activities under each alternative would produce emissions, and what potential mitigation measures or carbon sequestration actions could be taken? What types of management practices should be considered to reduce air quality emissions and impacts, where they are predicted to be of concern?
10. **Recreation:** What recreational experiences and outcomes should be the focus of future recreation management in the D-E NCA? How will recreational services and facilities anticipate and proactively prepare for increased recreation use? What visitor services (e.g., facilities and developments) are necessary to provide for an optimal recreational experience while also protecting the resources and the undeveloped nature of the D-E NCA? What criteria should be placed on future special recreation permits (SRPs) to ensure protection of the purposes for which the area was designated? What criteria should be placed on casual recreational use activities to ensure protection of the purposes for which the area was designated? What opportunities could be created for the D-E NCA trail system to connect with the Grand Junction Riverfront Trail system?
11. **Science and Education:** What interpretive priorities could be established to enhance the public's understanding of the D-E NCA's resources? What restrictions should be placed on scientific research within the D-E NCA?
12. **Livestock Grazing:** What facilities or changes in management, if any, are necessary to properly administer the grazing program within the D-E NCA? How can the BLM facilitate understanding of the historical and current role of grazing on public lands in the western United States? What steps may need to be taken to resolve avoidable conflicts between recreation and grazing? How should the BLM reduce the likelihood of interaction (and disease transmission) between domestic sheep and desert bighorn sheep?
13. **Transportation and Travel Management:** What are the principal travel priorities for this area for the public, as well as for administrative uses (e.g., research and monitoring, grazing management, or emergency access)? What routes should be designated as open, closed, or limited for all travel modes (from motorized to non-motorized), based on opportunities to be provided and/or the need to protect resources? What travel system is needed to support recreation demand in the D-E NCA? How might the BLM reduce trespass onto private lands?
14. **Lands and Realty:** Where might potential land tenure adjustments exist? How might utility corridors, rights-of-way (ROWs), and withdrawals affect the D-E NCA? What criteria should be established to guide future decisions related to these public land uses?

15. **Special Designations:** Is special management still warranted for the relevant and important values recognized in the two existing ACEC nominations? Given the management that will be developed to protect the resources identified in the Omnibus Act, what additional lands should be considered for ACEC status? What stream segments, if any, are suitable for designation as wild, scenic, or recreational? What additional resource conflicts, needed visitor services, and recreation and interpretive opportunities should be resolved or developed for the Old Spanish NHT? What protections should be implemented for the Old Spanish NHT? Where might the BLM designate a watchable wildlife area in the D-E NCA?
16. **Public Safety (Law Enforcement):** What measures could the BLM take to protect private property from trespass and/or vandalism? Are there actions that the BLM could take to reduce trash dumping and littering on the public lands?
17. **Socioeconomics:** How might the BLM best work with the tourism industry, the State of Colorado, visitor and convention bureaus, local businesses, and others to ensure visitors are provided with the correct information, and to ensure that promotion of the area's resources is accomplished? How might the BLM craft its RMP to respond to future population growth and demographic changes in the area surrounding the D-E NCA?

## Planning Issues Considered but Not Further Analyzed

Some issues raised during the scoping process were considered but not carried forward for further analysis. These issues were generally resolved by their appropriate placement into one or more of the following classifications:

- Those that would be resolved through internal policy or administrative actions
- Those already required by law
- Those that were already being addressed, or would be addressed independently of the current planning process
- Those determined to be beyond the scope of the current planning process. This includes issues associated with areas outside of the planning area, or broader agency-wide or statewide issues.

In addition, Chapter 2 (specifically, section 2.3, Alternatives Considered but Eliminated from Detailed Analysis) describes three alternatives that were proposed by the public during scoping and were considered by the BLM, but were subsequently eliminated from detailed analysis. These are the No-Grazing Alternative, Designate Additional Wilderness Study Areas, and Describe Existing and Reasonably Foreseeable Energy Development. The rationale for the decision to eliminate these alternatives from detailed analysis is explained in section 2.3.

## 1.6. Planning Criteria and Legislative Constraints

### Legislative Constraints

FLPMA established provisions for land use planning, land acquisition and disposition, administration, rangeland management, rights-of-way, and designated management areas and the repeal of certain laws and statutes. NEPA provides the basic national charter for environmental responsibility and requires the consideration and public availability of information on the

environmental impacts of major Federal actions significantly affecting the quality of the human environment. In concert, FLPMA and NEPA provide overarching guidance for all BLM activities.

Management of the Dominguez Canyon Wilderness must comply with the Wilderness Act of 1964. The Wilderness Act established a National Wilderness Preservation System and identified a wilderness area as “an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain.” The Wilderness Act goes on to further define a wilderness area as “an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions.” More specific language within the Wilderness Act pertains to the management of wilderness areas, including the Dominguez Canyon Wilderness.

Management of the Old Spanish NHT must comply with the National Trails System Act of 1968, as amended. The National Trails System established a national system of trails and identified national historic trails as “extended trails which follow as closely as possible and practicable the original trails or routes of travel of national historic significance. Designation of such trails or routes shall be continuous, but the established or developed trail, and the acquisition thereof, need not be continuous on site. National historic trails shall have as their purpose the identification and protection of the historic route and its historic remnants and artifacts for public use and enjoyment” (Sec. 3(a)(3)).

The Omnibus Act included specific direction to guide decisions within the D-E NCA and the Wilderness. In addition to designating both areas and defining the purpose of their designation, the Omnibus Act included the following:

- “The Secretary shall allow only such uses of the Conservation Area as the Secretary determines would further the purposes for which the Conservation Area is established.”
- “...motor vehicle use...shall be allowed only on roads and trails designated for use of motor vehicles in the management plan that applies on the date of enactment of this Act.”
- “Subject to valid existing rights, all Federal land within the Conservation Area and the Wilderness and all land and interests in land acquired by the United States within the Conservation Area or the Wilderness is withdrawn from all forms of entry, appropriation, or disposal under the public land laws; location, entry, and patent under the mining laws; and operation of the mineral leasing, mineral materials, and geothermal leasing laws.”
- “...the Secretary shall issue and administer any grazing leases or permits in the Conservation Area in accordance with the laws (including regulations) applicable to the issuance and administration of such leases and permits on other land under the jurisdiction of the Bureau of Land Management.”
- “The Secretary shall develop a comprehensive management plan for the long-term protection and management of the Conservation Area. ...The management plan shall describe the appropriate uses and management of the Conservation Area; be developed with extensive public input; take into consideration any information developed in studies of the land within the Conservation Area; and include a comprehensive travel management plan.”
- “The Secretary shall establish an advisory council, to be known as the Dominguez-Escalante National Conservation Area Advisory Council, [to]...advise the Secretary with respect to the preparation and implementation of the management plan.”



## Planning Criteria

Planning criteria are the standards, rules, and guidelines that help to guide data collection and alternative formulation and selection in the RMP development process. In conjunction with the planning issues, planning criteria ensure that the planning process is focused. The criteria also help guide the final plan selection and provide a basis for judging the responsiveness of the planning options.

The BLM developed preliminary planning criteria before public scoping meetings to set sideboards for planning and to guide decision-making by topic.

The planning criteria were as follows:

1. The RMP must ensure the BLM conserves and protects those resources identified as purposes in the Omnibus Act; and meets the additional legislative requirements of the Omnibus Act.
2. The RMP will cover public lands and split estate managed by BLM. No decisions will be made relative to lands administered by entities other than BLM, and decisions made within this RMP do not apply to private lands within the planning area.
3. The RMP will be completed in compliance with FLPMA, NEPA, and all other applicable laws, rules, regulations, policies, and guidelines—including environmental laws and executive orders listed as supplemental authorities in Appendix 1 of H-1790-1 (BLM 2008a).
4. The RMP will consider guidance contained in applicable BLM manuals and handbooks, including Manual 1601 (BLM 2000a), Handbook H-1601-1, *Land Use Planning Handbook* (BLM 2005), and H-1790-1, BLM's NEPA handbook (BLM 2008a).
5. Proposed management within the Wilderness will be consistent with the Wilderness Act.
6. To the extent possible, decisions in the plan will be compatible with the existing plans and policies of adjacent local, State, and Federal agencies, as long as the decisions conform to Federal laws and regulations that direct resource management on BLM lands.
7. The planning process will include an analysis of the potential impacts associated with the proposed management alternatives, and an EIS will be completed alongside the development of the RMP (43 CFR 1610 and 40 CFR 1500).
8. The RMP will recognize valid existing rights.
9. The BLM will recognize the specific niche that Federal lands provide, both to the nation and to the surrounding community. A successful plan will be one that is responsive to both national and community needs.
10. Public participation will be encouraged throughout the process. The BLM will collaborate and build relationships with tribes, State and local governments, Federal agencies, local stakeholders, and others in the community. Collaborators are regularly informed and offered timely and meaningful opportunities to participate in the planning process.
11. The RMP will include a defined travel management network for the D-E NCA.
12. The RMP will incorporate the BLM's Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado (BLM 1997 and Appendix D) and will

lay out a strategy for ensuring that proper grazing practices are followed. Grazing will be managed to maintain or improve the health of the BLM lands to enhance resource conditions into permitted operations.

13. All proposed management actions and alternatives will consider current scientific information, research and technology, as well as existing inventory and monitoring information.
14. Specific planning decisions will be established to protect, enhance, and interpret the values associated with the congressionally designated Old Spanish NHT, building on the ongoing planning being completed for this resource at the national level.
15. The planning process will recognize the results of previous collaborative planning efforts, and will focus ongoing collaborative effort so that collaborators can see that they make a difference, within a time frame that is reasonable and achievable.
16. The RMP will include adaptive management criteria and protocols that are based on the principles of clearly identified outcomes, monitoring to determine if management actions are meeting outcomes, and a process for facilitating management changes that will best ensure that outcomes are met or whether reevaluation is necessary. Where an adaptive management approach is specified, the criteria that will trigger reevaluation of management will be clearly identified.
17. The RMP will address management of livestock grazing leases and permits in accordance with all applicable laws, rules, regulations, policies, and guidelines.
18. Lands within the D-E NCA will be inventoried for visual resource and assigned a VRM class ranging from Class I to Class IV. These VRM classes will serve as guidance to ensure that future management activities are designed to meet the assigned classes.
19. The planning process will consider activities that are necessary to control fire, insects and disease in the NCA, including activities to control non-native, noxious and/or invasive weeds, in accordance with the Wilderness Act and the D-E NCA's enabling legislation.
20. The RMP will provide management direction for wildlife habitat on BLM-administered public lands while recognizing the Colorado Division of Parks and Wildlife's (CPW's) responsibility to manage wildlife populations. The BLM will consult with CPW in establishing policy for the purposes of ensuring public safety and land health, as well as public use and enjoyment.
21. The RMP will evaluate the need for special designations or other management determinations, as applicable, such as for public land surface waters eligible and suitable for Congressional designation as wild and scenic rivers; and will provide an opportunity to submit nominations for additional ACECs and re-evaluate existing ACEC designations.
22. The RMP will consider management direction in existing Fire Management Plans and will carry forward existing decisions where they remain valid and responsive to the purposes of the designation to provide overall fire/fuel management direction for the D-E NCA and the Wilderness.

23. Planning and management direction will be focused on the relative values of resources as guided by the legislation and not the combination of uses that will give the greatest economic return or economic output.
24. Decisions in existing plans (i.e., Grand Junction RMP; Uncompahgre Basin RMP) will be considered during the process of developing the new RMP. Where existing decisions remain valid and responsive to the purposes of the designation, they may be carried forward into one or more alternatives.

## 1.7. Collaboration

### Collaboration, Cooperating Agencies, and Communication with Stakeholders

The benefits of enhanced collaboration among agencies in preparing NEPA analyses are many: relevant information is disclosed early in the analytical process; available technical expertise and staff support is used; duplication with other Federal, State, tribal, and local procedures is avoided; and a mechanism for addressing intergovernmental issues is established. In addition to formal scoping, the BLM implemented an extensive collaborative outreach and involvement process that included working with Colorado Mesa University on community assessments, coordinating with cooperating agencies, consulting with Native American tribes that have cultural and historical ties to the region, and working closely with the D-E NCA Advisory Council. See Chapter 5, Consultation and Coordination, for more detail.

Eight agencies agreed to become formal cooperating agencies for the development of the D-E NCA RMP on the basis of their special expertise and/or legal jurisdiction. Each of these agencies had an opportunity to suggest alternative management actions, contribute to the impact analysis, and identify concerns with management actions early in the planning process and to work with the BLM and the rest of the planning team to understand and resolve those concerns. The cooperating agencies were as follows:

- City of Delta
- City of Grand Junction
- City of Montrose
- Colorado Division of Natural Resources, including Colorado Parks and Wildlife (CPW) and Colorado Water Conservation Board (CWCB)
- Delta County
- Mesa County
- Montrose County
- U.S. Forest Service (USFS)

In addition, the BLM consulted with the three federally recognized Ute tribes:

- Southern Ute Indian Tribe

- Ute Mountain Ute Indian Tribe
- Ute Tribe of the Uintah and Ouray Reservation

## Advisory Council

The Omnibus Act directed the Secretary of Interior to establish the D-E NCA Advisory Council. The Omnibus Act directed that the Council shall advise the Secretary of Interior with respect to the preparation and implementation of the management plan, in accordance with the Federal Advisory Committees Act and FLPMA. As directed by the Omnibus Act, the Council is comprised of 10 members appointed by the Secretary of the Interior. Three members of the Advisory Council represent the three county governments (Mesa, Delta, and Montrose Counties). One member is a livestock grazing permittee and represents permittees holding grazing allotments within the NCA. The remaining six members are residents of the three counties whose backgrounds reflect either a) the purposes for which the NCA was established or b) the interests of the stakeholders that are affected by the planning and management of the NCA. These members therefore represent recreation (dispersed, motorized, and mechanized), cultural resources, environmental issues, wilderness, restoration, science, education, wildlife, and ecology.

The Advisory Council was established in November 2010. During the development of the Draft RMP, the Advisory Council met 25 times. All meetings were open to the public and provided opportunity for public comment. During these meetings, the Advisory Council made numerous recommendations for the BLM to consider while developing the Draft RMP. After the release of the Draft RMP for public comment, the Advisory Council met 10 times to review the differences between the Draft Preferred Alternative and the previous Council recommendations. As a result of the discussions in those 10 meetings, the Advisory Council made the following formal recommendations for the BLM to consider during development of the Proposed Plan Alternative:

### 1. Priority Species and Vegetation

- Support Alternative D for the management of mountain shrubland communities.
- Allow no new routes in sagebrush patches 60 acres or larger; it is acceptable to reroute interior routes to the edges of a patch.

### 2. Wilderness

- Limit travel to designated routes in Wilderness Zone 1, with considerations for need to water horses, cultural and heritage resources, hunting.
- Support Alternative E (the Draft Preferred Alternative) for group size limitations, so long as BLM retains the flexibility to meet NCA goals regarding education and other values.
- Protect and restore supplemental values in all zones.

### 3. Areas of Critical Environmental Concern

- Support Alternative D for Gibbler Mountain (ACEC) within the Cactus Park Special Recreation Management Area; support a horse route or quiet trail as opportunities arise.

### 4. Recreation

- In Ninemile Hill, manage for quiet use with exceptions for county-maintained roads and pullouts; emphasize creating a long-distance motorized corridor with associated facilities.
- Keep Sawmill Mesa an extensive recreation management area (ERMA), with the area north of the Escalante Rim Road set aside as a non-motorized SRMA for mountain biking. Emphasize the use of existing routes, combining them to develop a new mountain bike trail system, as resource conservation needs allow.
- Close the mouth of Big Dominguez to camping.
- Ban glass containers in the NCA.
- Allow physical geocaches in the NCA, except in the Wilderness, where they should only be virtual. Geocaches already present should be grandfathered. Future sites should require the BLM's approval.
- Adopt the Draft RMP Alternative E's proposals for target shooting and do not have any more closures.
- Seek to have additional access points into the Wilderness, the NCA in general, and especially along Bean Ranch Road in the Hunting Ground.
- Retain seasonal closures as in Alternative E of the Draft RMP and leave Farmer's Canyon Road open year-round.

## 5. Livestock Grazing

- Keep Rose Creek open to grazing but close the Bean Ranch allotment.

## 6. National Trails

- Protect the Old Spanish NHT, and use off-site rather than on-site interpretation.

# 1.8. Related Land Use Plans and Assessments

The D-E NCA RMP was developed concurrently with the revision of RMPs for two neighboring BLM field offices: Grand Junction and Uncompahgre. The BLM's interdisciplinary team (IDT) formed for the development of this RMP consisted of representatives from both of these field offices, and coordination between planning teams was a major part of the planning process for this RMP. As a result, the BLM strived to ensure that the D-E NCA RMP was consistent with the revised RMPs developed by adjacent field offices.

In addition, the BLM strived to ensure that the D-E NCA RMP was consistent with the plans of the cooperating agencies identified in section 1.7 above. These plans include the following:

- *Grand Mesa, Uncompahgre, and Gunnison National Forests Land and Resource Management Plan* (USFS 1983), as amended.
- 1996 Delta County master plan (Delta County 1996). Countywide land use and growth plan for Delta County.
- 2000 Mesa County master plan (Mesa County 2000). Countywide land use and growth plan for Mesa County.

- 2010 Montrose County master plan (Montrose County 2010). Countywide land use and growth plan for Montrose County.

Other related plans include habitat and species-specific plans completed by CPW and recovery plans completed by the U.S. Fish and Wildlife Service (USFWS).

## Rapid Ecoregional Assessments

Rapid Ecoregional Assessments (REAs) are peer-reviewed documents that synthesize existing science about resource conditions and trends within a particular ecoregion. In addition, REAs establish landscape-scale, baseline ecological data that can be used when evaluating past and future management actions. In 2012, the BLM completed a REA for the Colorado Plateau, which encompasses the planning area. More information regarding the Colorado Plateau REA (CPREA) can be found on the BLM Colorado website. Application of the CPREA was conducted in accordance with BLM policy: Instruction Memorandum No. 2013-082 (I 2013-082), *Use of Regional Assessments*.

The CPREA was completed after much of the analysis for the D-E NCA was already done. A review of this REA revealed that it contains no significant new information. However, it does support the PPSV framework used in the D-E NCA RMP planning. The CPREA is an ecoregional-level document to be used as an informational tool by the BLM. The CPREA identifies “change agents” associated with specific “conservation elements.” Change agents include both natural and anthropogenic disturbance factors, and conservation elements include ecological systems as well as wildlife species. Current distribution data layers used in the CPREA are not significantly different from BLM layers used for D-E NCA PPSV analyses.

The CPREA addresses certain ecological systems as conservation elements, which mirror the priority vegetation/habitats chosen for PPSV in the D-E NCA RMP. Specifically, the PPSV identifies “desert shrub/saltbush,” whereas the CPREA identifies “inter-mountain basins mixed salt desert scrub”; PPSV identifies “pinyon juniper woodlands,” whereas CPREA identifies “pinyon juniper shrublands”; PPSV identifies “sagebrush shrublands,” whereas CPREA identifies “inter-mountain basins big sagebrush shrublands”; and PPSV identifies “mountain shrub,” whereas CPREA identifies “Rocky Mountain Gambel’s oak-mixed montane shrubland.” Both PPSV and CPREA identify “riparian vegetation.”

PPSV monitoring proposed in the D-E NCA RMP will encompass the potential change agents identified for ecological systems discussed in the CPREA, including the effects of fire frequency and severity, invasive plants, and grazing. Additionally, the CPREA identifies certain wildlife species as species conservation elements. One of these species, desert bighorn sheep, is also identified by PPSV for the D-E NCA RMP. Important attributes listed for desert bighorn sheep in the CPREA are habitat, climate, and disease, all of which are encompassed in the PPSV framework. PPSV measures will take into account potential change agents listed for desert bighorn sheep in the CPREA, including recreation, development, altered fire regime, invasive plants, direct take, and grazing. The CPREA shows a series of data layers that represent models of future potentials and are as valid as the data and assumptions used to create the models. The resource specialist is advised of this when he or she is evaluating a specific CPREA model. Models include projected near term (to the year 2025) status on a scale of “very high” to “very low” vulnerability to change agents and development, including energy, agricultural, urban, road, and recreation development.

Climate change models predict “very high” to “very low” potential for climate change in the range of years 2015 to 2060. There are also energy development models; however, these may be less predictive for the D-E NCA, as the NCA was withdrawn from mining, mineral leasing, mineral materials, and geothermal leasing in its designating legislation, the Omnibus Act. Each model considers drivers specifically identified for a particular conservation element (ecosystem or species). Because of the relatively large scale of the CPREA compared to the D-E NCA—the D-E NCA represents 0.004 percent of the Colorado Plateau area analyzed in the CPREA, with the D-E NCA equaling approximately 210,000 acres and the Colorado Plateau equaling 46,855,140 acres—and the inherent uncertainty of modeling, specific CPREA analyses were not used to inform the discussion of environmental consequences in the D-E NCA RMP. However, specific CPREA model outcomes and maps may be used to help inform management decisions at the implementation level, although these should be reviewed by resource specialists.

## 1.9. Public Comments on the Draft RMP

### Distribution of the Draft RMP

The formal public comment period for the D-E NCA Draft RMP began on May 17, 2013, with the publication of the notice of availability (NOA) in the *Federal Register*. The NOA, posters placed in kiosks within the D-E NCA and at local libraries, announcements in local newspapers, and a newsletter (sent to all those agencies, organizations, and members of the public that were on the project distribution list) announced the availability of the Draft RMP and listed the time and place for the scheduled BLM open house meetings.

The BLM distributed copies of the Draft RMP to those organizations and individuals who had previously requested copies or submitted requests subsequent to the publication of the NOA. The Draft RMP was also available at local public libraries in Delta and Grand Junction, at the local BLM field offices, and for download from the BLM’s project website.

### Comment Period and Open House Meetings

Under BLM planning regulations, a Draft EIS public comment period must last for at least 90 days. Initially, the BLM set a 90-day public comment period that lasted until August 24, 2013. Before the end of the comment period, BLM received multiple requests to extend the comment period and subsequently extended the comment period by another 30 days to September 23, 2013.

The BLM hosted two open house meetings (see Table 1.3) to provide the public with opportunities to hear an overview and ask questions about the project and planning process, to meet the RMP team members, to review dozens of resource-specific maps, and to offer comments. The open house format was chosen over the more formal public meeting format to encourage broader participation and to allow attendees to talk with BLM representatives in an informal setting.

**Table 1.3. Draft RMP Open House Schedule and Attendance**

Venue	Location	Date	Attendance
Colorado Mesa University Center	Grand Junction	June 17, 2013	30
Bill Heddles Recreation Center	Delta	June 19, 2013	60

## Comment Collection and Analysis

At the open house meetings, attendees were able to submit comments directly to the BLM through an ePlanning online comment portal or as written statements. All written comments received by BLM were logged, categorized, evaluated, and considered in the preparation of the Proposed Plan Alternative. Methods of submitting comments included email, comment forms, letters, facsimiles, and through the BLM's ePlanning website. Most comments were submitted electronically by email.

Over 1,300 written comment letters (called "submissions") were received. As letters were received, they were assigned a unique identifying number. Several different organizations generated form letters for the public comment period and gave members of the public access to those form letters, which they either submitted individually or collectively through the organizations. These form letters were essentially identical. Where an individual altered the contents of the form letters or made additional remarks, these changes were noted as individual comments and were treated like all other distinct comments, as described below.

Exclusive of the form letters, the BLM received 281 distinct written submissions. Within these submissions, approximately 1,585 distinct comments were identified for review by BLM specialists and managers.

## Comments by Issue Category

The BLM coded over 1,500 distinct comments according to comment categories. Many comments were coded to multiple comment categories. The categories included resources, resource uses, and special designations discussed in the Draft RMP, as well as authorities and NEPA and RMP procedural issues. Table 1.4 shows the number of comments for each of the categories. The categories with the most comments (over 5 percent each) were recreation and comprehensive travel and transportation management. Comments that simply expressed approval or disapproval of an individual alternative or action without explanation were considered non-substantive comments (see "Comment Responses" below), and the BLM typically did not respond to them. Appendix U, The BLM's Responses to Public Comments provides further details.

**Table 1.4. Public Comments by Issue Category**

Section Number in Appendix U of This Document	Issue Category, or Section in the D-E NCA Draft RMP	Number of Comments	Percentage of Total Comments
U.3.1	Non-Substantive Comments	326	18.4%
U.3.2	<b>COMMENTS ON AUTHORITIES</b>		
U.3.2.1	Constitutionality and State Rights	2	0.1%
U.3.2.2	Statutory Authorities	8	0.5%
U.3.2.3	R.S. 2477 Rights-of-Way	9	0.5%
U.3.3	Request for Extension of Public Comment Period	2	0.1%
U.3.4	Implementation-Level Comments	31	1.8%
U.3.5	Comments Regarding Other Planning Areas	2	0.1%



Section Number in Appendix U of This Document	Issue Category, or Section in the D-E NCA Draft RMP	Number of Comments	Percentage of Total Comments
U.3.6	Route-Specific Comments Made Prior to Draft RMP Release	25	1.4%
U.3.7	<b>GENERAL COMMENTS ON THE ENTIRE DRAFT RMP</b>		
U.3.7.1	Data Adequacy	2	0.1%
U.3.7.2	Range of Alternatives	2	0.1%
U.3.7.3	Need for a Monitoring Plan	1	0.1%
U.3.8	<b>COMMENTS ON CHAPTER 1: INTRODUCTION</b>		
U.3.8.1	Purpose of and Need for the Plan	4	0.2%
U.3.8.2	Planning Process	11	0.6%
U.3.9	<b>COMMENTS ON CHAPTERS 2–4: RESOURCES</b>		
U.3.9.1	Geological and Paleontological Resources	6	0.3%
U.3.9.2	Priority Vegetation and Habitats	60	3.4%
U.3.9.3	Special Status Species and Natural Communities-Plants	21	1.2%
U.3.9.4	Special Status Species and Natural Communities-Wildlife	39	2.2%
U.3.9.5	Special Status Species and Natural Communities-Desert Bighorn Sheep	30	1.7%
U.3.9.6	Non-Special Status Fish and Wildlife	36	2.0%
U.3.9.7	Noxious and Invasive Weeds	9	0.5%
U.3.9.8	Fire and Fuels	2	0.1%
U.3.9.9	Soils and Water Quality	19	1.1%
U.3.9.10	Climate and Climate Change	6	0.3%
U.3.9.11	Cultural Resources	23	1.3%
U.3.9.12	Wilderness	40	2.3%
U.3.9.13	Lands with Wilderness Characteristics	33	1.9%
U.3.9.14	Scenic Resources	7	0.4%
U.3.9.15	Air Resources	6	0.3%
U.3.10	<b>COMMENTS ON CHAPTERS 2–4: RESOURCE USES</b>		
U.3.10.1	Recreation	400	22.6%
U.3.10.2	Recreational Target Shooting	73	4.1%
U.3.10.3	Scientific Use	2	0.1%
U.3.10.4	Educational Use	7	0.4%
U.3.10.5	Livestock Grazing	63	3.6%
U.3.10.6	Transportation and Travel Management	53	3.0%
U.3.10.7	Land Tenure and Land Use Authorizations	14	0.8%
U.3.11	<b>COMMENTS ON CHAPTERS 2–4: SPECIAL DESIGNATIONS</b>		
U.3.11.1	Areas of Critical Environmental Concern	48	2.7%
U.3.11.2	National Trails	4	0.2%

Section Number in Appendix U of This Document	Issue Category, or Section in the D-E NCA Draft RMP	Number of Comments	Percentage of Total Comments
U.3.11.3	Wild and Scenic Rivers	30	1.7%
U.3.11.4	Wilderness Study Areas	3	0.2%
U.3.11.5	Watchable Wildlife Areas	7	0.4%
U.3.12	<b>COMMENTS ON CHAPTERS 2–4: SOCIAL AND ECONOMIC CONCERNS</b>		
U.3.12.1	Public Safety	1	0.1%
U.3.12.2	Social and Economic Conditions	46	2.6%
U.3.13	<b>COMMENTS ON CHAPTER 5: CONSULTATION AND COORDINATION</b>	2	0.1%
U.3.14	<b>COMMENTS ON APPENDIX A: PLANNING FOR PRIORITY VEGETATION/HABITATS AND SPECIES</b>	2	0.1%
U.3.15	<b>COMMENTS ON APPENDIX B: DESCRIPTION OF SURFACE DISTURBANCE RESTRICTIONS</b>	4	0.2%
U.3.16	<b>COMMENTS ON APPENDIX C: BIGHORN/DOMESTIC SHEEP PROBABILITY OF INTERACTION MODEL</b>	11	0.6%
U.3.17	<b>COMMENTS ON APPENDIX I: SPECIAL RECREATION PERMIT PROGRAM OVERVIEW</b>	3	0.2%
U.3.18	<b>COMMENTS ON APPENDIX J: BEST MANAGEMENT PRACTICES FOR MANAGEMENT ACTIONS</b>		
U.3.18.1	Water Resources	2	0.1%
U.3.18.2	Noxious and Invasive Weed Prevention	3	0.2%
U.3.18.3	Fish and Wildlife Management and Special Status Species	2	0.1%
U.3.19	<b>COMMENTS ON APPENDIX K. CRITERIA FOR THE PLACEMENT OF TRAILS</b>	3	0.2%
U.3.20	<b>COMMENTS ON APPENDIX N: COMPREHENSIVE TRAVEL AND TRANSPORTATION MANAGEMENT PLAN</b>		
U.3.20.1	Comments on the Travel Management Planning Process	31	1.8%

Section Number in Appendix U of This Document	Issue Category, or Section in the D-E NCA Draft RMP	Number of Comments	Percentage of Total Comments
U.3.20.2	Route-Specific Travel Management Comments	193	10.9%
<b>TOTAL</b>		<b>1769</b>	<b>100.0%</b>

## Comment Responses

The BLM carefully considered each person's or organization's viewpoint to first determine whether a comment was substantive or non-substantive in nature. According to NEPA, the BLM is required to identify and formally respond to all substantive public comments. On the basis of CEQ regulations, a substantive comment does one or more of the following:

- Questions, with a reasonable basis, the accuracy of the information and/or analysis in the EIS.
- Questions, with a reasonable basis, the adequacy of the information and/or analysis in the EIS.
- Presents reasonable alternatives other than those described in the Draft RMP that meet the purpose and need of the proposed action and address significant issues.
- Questions, with a reasonable basis, the merits of an alternative or alternatives.
- Causes changes in or revisions to the proposed action.
- Questions, with a reasonable basis, the adequacy of the planning process itself.

Non-substantive comments simply state a position in favor of or against an alternative or a management action proposed in an alternative; merely agree or disagree with BLM policy; provide information not directly related to issues or impact analyses; or otherwise express an unsupported personal preference or opinion.

The BLM reviewed and considered all non-substantive comments, but did not provide formal responses to such comments. Although non-substantive comments, including personal preferences and opinions, may have been considered by the BLM's IDT, they generally did not affect the analysis.

A single comment that addressed multiple issues was coded for several specialists to review. For example, a comment that related to water quality, fisheries, and recreational fishing was coded for review by a hydrologist (water resources), a biologist (fisheries), and an outdoor recreation planner (recreational fishing). Sometimes it was necessary for the entire IDT to review and respond to comments. In addition to simply categorizing by issue, the BLM further grouped those categorized comments on the basis of their pertinence to the major sections of the RMP. If a comment questioned the analysis, the BLM coded the comment to Chapter 4 for each particular issue. If the comment provided new information about the affected environment, the BLM coded the comment as pertinent to Chapter 3 for each particular issue. The BLM coded management action comments to Chapter 2 for each particular issue.

All identified comments were distributed by comment issue/category to the appropriate IDT specialists in the D-E NCA, GJFO, UFO, and BLM Colorado State Office for review, summary, and response. For instances in which a number of comments addressed the same or similar issues, the BLM specialists crafted a collective summary and response for that group of comments. In

analyzing and incorporating comments, the BLM emphasized the content of the comment rather than the number of times the same comment was received. Ultimately, the BLM considered every comment, whether it came repeatedly from many people with the same message, from an organization, or from a single person raising a substantive concern.

The BLM changed many line items in the matrix after careful consideration of public comments. The D-E NCA also discussed summaries of substantive public comments with cooperating agency representatives and with the Advisory Council. The BLM's comment summaries and responses can be found in Appendix U. Modifications to the Draft Preferred Alternative are shown in the Chapter 2 Alternatives Matrix, in the "Proposed Plan Alternative" column.

For route-specific ("route-by-route") comments, the BLM inserted all comments into a travel management database designed by a local university student in conjunction with the BLM. These comments were then reviewed and considered by the IDT during the development of the Proposed RMP Travel Management Plan. The team reviewed comments for each route as it developed the route's proposed designation. The resulting report of route-specific public comments is in Appendix U. A more in-depth explanation of the travel management planning process can be found in Appendix N.

## **1.10. Implementation and Monitoring of the Resource Management Plan**

Implementation of the RMP would begin when the Colorado BLM State Director signs the ROD for the RMP. Decisions in the RMP would be tied to the BLM budgeting process. An implementation schedule would be developed, providing for systematic accomplishment of decisions in the approved RMP. The BLM will prepare supplementary rules in order to provide full authority to BLM Law Enforcement to enforce management decisions made in the approved RMP pursuant to the BLM's authority under 43 CFR 8365.1-6. During implementation of the RMP, site-specific analysis may be required, which can vary from a simple statement of conformance with the ROD to more complex documents that analyze several alternatives. For example, an EA could be required for some large-scale implementation decisions, such as travel management decisions. An EA documents the NEPA requirements for site-specific actions. The RMP would be monitored and periodically evaluated based on guidance in the BLM's *Land Use Planning Handbook*, H-1601-1 (BLM 2005). Monitoring is the process of tracking and documenting the implementation (or the progress of implementation) of land use plan decisions. Evaluation is the process of reviewing the land use plan and the periodic plan monitoring reports to determine whether the land use plan decisions and NEPA analysis are still valid and where the plan is being implemented. As outlined in BLM's *Land Use Planning Handbook*, H-1601-1 (BLM 2005), the plan should be periodically evaluated (at a minimum every 5 years) as documented in an evaluation schedule. Revisions or amendments to the RMP may be necessary to accommodate changes in resource needs, policies, or regulations. Other decisions would be issued in order to fully implement the RMP.

## **1.11. Changes to the Draft RMP**

Changes to the Draft RMP were made largely in response to public comment, cooperating agency review, Advisory Council recommendations, and extensive internal BLM review. These changes are shown as grey-highlighted text (or white-highlighted text if on a dark background) throughout this document. Though many changes to the Draft RMP were editorial in nature or were simple

updates to data used in the analysis, some changes were made to the actions presented in the Draft RMP. Overall, these changes represented components of alternatives presented in the Draft EIS and do not necessitate a supplemental analysis.

Throughout development of the Proposed RMP, the BLM made editorial changes to improve clarity and technical changes to correct errors. The BLM added new information on resources and resource use. Furthermore, due to previously inaccurate data sets, unknown sources, or outdated information, the BLM corrected and updated geographic information system (GIS) information (e.g., acreage figures and associated quantifications).

In Chapter 2, the BLM often made changes to individual management actions in the Draft Preferred Alternative to combine management approaches and tools from a variety of alternatives, in order to provide a complete toolset to meet the associated goals and objectives for such actions. For example, Alternative B emphasized use restriction for many actions, while Alternative C emphasized more intensive management, such as treatments. The Proposed Plan Alternative, by contrast, often combines the use of both restrictions and intensive management to implement a variety of actions. The more noteworthy changes that the BLM made to Chapter 2, including key changes to the Draft Preferred Alternative, which has been replaced by the Proposed Plan Alternative, are described below.

## **Climate Change**

In Chapter 2, Elements Common to All Alternatives, the Proposed Plan Alternative has more explicitly clarified the BLM's approach to incorporating the localized impacts of climate change into its management of the D-E NCA. Consistent with the framework and objectives for managing priority species and vegetation (PPSV, see Appendix A), the BLM will create climate vulnerability assessments for these target species and vegetation communities in order to implement the goals and objectives for these biological resources. Using appropriate indicators, the BLM can identify accelerated change that extends beyond the bounds of the target indicator standards found within the PPSV framework for the D-E NCA. This would enable the BLM to identify any such at-risk or declining species and communities and modify its management approach accordingly.

## **Priority Species and Vegetation**

- In order to minimize sagebrush fragmentation and restore the extent of more intact sagebrush within the D-E NCA, the Proposed Plan Alternative restricts route construction in sagebrush patches 60 acres or larger and prioritizes reroutes that would result in a higher proportion of larger patches. This is slightly more restrictive than the Draft Preferred Alternative, but less restrictive than Alternatives B and C.
- Vegetation treatments/active management in the mountain shrub community would be used to reach PPSV objectives as appropriate, similarly to under Alternatives A, C, and D. This is a more active management approach than presented in the Draft Preferred Alternative.

## **Special Status Species**

- To protect bighorn production habitat from all types of disruptive activities and further fragmentation, the Proposed Plan Alternative would limit construction of a new foot and horse

trail system in the Ninemile Hill recreation management area (RMA) to the area above the rim of the Gunnison Slopes. Alternatives A, B, and C would not construct this new route system, while the Draft Preferred Alternative would have constructed it without the limitation.

- Two grazing allotments that span across Highway 50 from the D-E NCA into BLM's Uncompahgre Field Office would be divided at the NCA boundary for a more practical management approach. Those portions within D-E NCA would then be identified as having a high probability of interaction with bighorn sheep. These are administrative changes to divide the allotment at the boundary of the D-E NCA, and they do not change any lands allocated for grazing.
- The Proposed Plan Alternative prohibits the use of pack goats within D-E NCA to minimize associated risk of disease transmission to bighorn sheep (same as Alternative B).
- Measures were incorporated in the Proposed Plan Alternative for BLM to consider, should the proposed risk management measures fail to prevent domestic and desert bighorn sheep association. These measures are derived from the Western Association of Fish and Wildlife Agencies (WAFWA) recommendations included as guidance in Alternatives C, D, and the Draft Preferred Alternative.
- Several protective measures associated with each risk category are updated to reflect public input. Similar herd numbers are proposed across categories of risk, but High-Risk allotments would be restricted to a shorter period of use.

## **Fish and Wildlife**

- To protect big game from disturbance during the winter season, the Proposed Plan Alternative carries forward the seasonal closure from December 1 to April 30 for motorized and mechanized travel in winter concentration areas. However, in response to substantial public comment regarding the motorized recreational demands within Cactus Park in the early winter and spring, the Proposed Plan Alternative excludes Farmers Canyon Road from the seasonal closure. The Farmers Canyon route would remain open year-round to provide a motorized "loop" opportunity until a new route can be connected north of Farmers Canyon outside the seasonal closure area.

## **Wilderness**

- In response to public comment about managing the Wilderness for a more appropriate balance between the different wilderness values, the Proposed Plan Alternative limits a variety of active management actions in the Wilderness to instances when PPSV indicators are poor/fair. A more conservative approach to maintaining and restoring naturalness within the Wilderness lessens the trammeling impacts associated with such on-the-ground management.
- In response to public comment about use patterns within Wilderness Zone 1, travel in Zone 1 is open for foot travel (same as Alternatives A, B, and D) and limited to existing trails for horses only (less restrictive than Alternative C and the Draft Preferred Alternative but more restrictive than Alternatives A, B, and D).
- Group size in Wilderness Zone 1 would be limited to 25 people or fewer, while size limits in Zones 2 and 3 would be simplified and both limited to 12 or fewer people to increase the

likelihood and ability of recreationists to comply. This is more restrictive than Alternatives A and B, but less restrictive than Alternatives C, D, and the Draft Preferred Alternative.

- The Gunnison River SRMA, which overlaps with the Wilderness, is carried forward in the Proposed Plan Alternative. Because of the emphasis on boating recreation within the SRMA, in the Proposed Plan Alternative, the mouth of Big Dominguez would be closed to non-boating overnight camping from May 1 through Labor Day weekend. SRMA management objectives for non-motorized boating would be furthered by closing BLM campsites and BLM boat ramps to motorized boats from May 1 to Labor Day weekend. These measures are slightly less restrictive than analyzed in the Draft Preferred Alternative.

## Recreational Use

- Firewood collection areas would be evaluated yearly and designated by the BLM in order to conserve, protect or enhance biological and/or cultural resources. Similarly, Christmas tree cutting areas would be evaluated and designated on an annual basis, where doing so helps meet goals and objectives established for biological resources in the NCA. These actions are similar to those in the Draft Preferred Alternative but include more detail.
- In response to public comments regarding geocaching, the Proposed Plan Alternative proposes to allow physical geocaches outside the Wilderness boundary with prior BLM approval, similarly to under Alternative C. Only earth caches would be allowed within the Wilderness, similarly to under the Draft Preferred Alternative.
- Glass containers would be banned at the Potholes Recreation Site in Escalante Canyon and would be banned in the Gunnison River SRMA. This is similar to what would happen under Alternative C.
- In order to provide adequate protection to the priority species and vegetation within the NCA, only non-motorized, non-mechanized recreational gold panning of material from below the surface of the water is permitted in the Proposed Plan Alternative. This is more restrictive than Alternatives A and D, but less restrictive than Alternatives B, C, and the Draft Preferred Alternative.
- Cottonwood/Dry Fork will not be managed as an SRMA in the Proposed Plan Alternative (same as Alternatives A, B, and C). Managing these areas for their wilderness characteristics would lead to a similar recreation outcome as managing the areas as SRMAs.
- In response to public comment regarding recreational uses in the Ninemile Hill area, the boundary in the Proposed Plan Alternative was modified to increase the size of the neighboring motorized Cactus Park SRMA, effectively reducing the Ninemile Hill RMA and allowing for more motorized access to a desired vista and recreational setting in that region of the NCA. The Cactus Park SRMA included this additional area in Alternative C. Ninemile Hill is proposed to be managed as an ERMA with opportunities for foot/horse recreation.

## Livestock Grazing

- To reflect a terminology change in associated BLM policy, the Proposed Plan Alternative redefines “trailing” as a specific and permitted activity: the active movement of livestock that occurs within the terms and conditions of an existing grazing permit. Other active movement of

livestock outside of an existing grazing permit, which requires a temporary use authorization under 43 CFR 4130.6–3, is defined as “crossing.” Throughout the Proposed RMP, “trailing” is generally replaced by the more generic term “active movement” to reflect the true intent of the management action to limit certain areas to active movement of livestock, whether or not a crossing permit is required by current BLM policy (see Glossary for definitions of “trailing” and “crossing.”)

- The Proposed Plan Alternative did not close Rose Creek to grazing, but instead limited the area to active movement only. This is the same as Alternatives A and D.
- Similarly to under all alternatives, in the Proposed Plan Alternative, livestock grazing permits will include seasonal utilization limits for palatable forage that reflect best management practices (BMPs) and are consistent with meeting land health standards or other biological objectives. An explicit maximum utilization target, as identified in the Draft Preferred Alternative, has been removed, so that appropriate utilization levels can be set during implementation based on site-specific allotment conditions.
- Acreages and AUM (see Glossary for definition) calculations for grazing allocations in all alternatives have been corrected to account for errors made in the Draft RMP and to generate consistent categories of areas that are available to grazing. Changes to AUMs and acres available to grazing from the Draft RMP are shaded in grey. Areas available to grazing include those open to grazing, whether currently allotted or unallotted, and areas limited to active movement only (of currently allotted acres).

## Lands and Realty

The Proposed RMP clarifies the distinction between right-of-way exclusion areas, right-of-way avoidance areas, and utility corridors. Those areas were not distinguished from one another in the Draft RMP, despite functional differences in the extent of resource use and resource protection within each category.

## Areas of Critical Environmental Concern

- Under the Proposed Plan Alternative, the Gunnison Gravels ACEC will continue to be managed. The highest level of protection for its unique geological resources would be obtained through a no surface disturbance restriction, which replaces the site-specific relocation (SSR) restriction that was applied to the area in the Draft Preferred Alternative.
- In response to substantial public comment, Gibbler Mountain is carried forward in the Proposed Plan Alternative as an ACEC. To achieve a balance between this designation and the overlapping designation of the Cactus Park SRMA, which would be managed for future trail development, the area of surface disturbance restriction within the Gibbler ACEC is lowered from 200 meters to a 100-meter buffer for BLM sensitive plant occurrences.



## **Lands with Wilderness Characteristics**

- To maximize management flexibility to create and reroute recreational trails within units proposed to be managed for their wilderness characteristics, the No Surface Disturbance restriction was changed to a SSR restriction in the Proposed Plan Alternative.
- The overlapping designation of these units as an SRMA is removed in the Proposed Plan Alternative. Managing lands for wilderness characteristics entails managing for primitive and unconfined recreation, which provides a similar recreation outcome.

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## **Chapter 2. Alternatives**

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## 2.1. Introduction

Land use planning regulations and NEPA require the BLM to develop a reasonable range of alternatives during the planning process. The basic intent of developing alternatives is to prepare different possible management scenarios that

- Address the identified major planning issues
- Explore opportunities to enhance or expand resources or resource uses
- Resolve conflicts among resources and resource uses
- Meet the purpose of and need for the RMP as defined in the EIS

Alternatives help the BLM and the public understand the various ways of addressing conflicts concerning alternative uses of available resources, and they also provide the BLM decision maker with a reasonable range of alternatives upon which to make an informed decision. The impact analysis chapter of the EIS (Chapter 4) complements this chapter by projecting what would happen in the future if any of the alternatives were implemented, thus allowing the consequences of the decisions to be understood.

For each alternative within an RMP, the BLM establishes desired outcomes (goals and objectives) for management of public lands and identifies the management actions and allowable uses necessary to achieve those desired outcomes. Because RMPs are broad in scale, site-specific implementation-level decisions are typically made after the RMP is adopted. In some cases these implementation-level decisions are included within the RMP and incorporated within the alternatives. Where implementation-level decisions are included in this Proposed RMP, they are labeled as “implementation actions” (see section 1.4 of this Proposed RMP for details regarding this distinction).

Each of the plan, implementation, and support decisions are characterized in the plan as goals, objectives, management actions, and allowable uses. These are defined as follows:

**Goals** describe broad direction and desired conditions for each resource or resource use. The goals stay the same for all alternatives. Goals are derived from the Omnibus Act of 2009 and BLM policy guidance.

**Objectives** describe more detailed outcomes or “desired future conditions” for different components of the resource or resource use that meet the overall goals. Some objectives are common to all alternatives, whereas others vary by alternative.

**Management Actions** describe efforts that BLM managers anticipate taking to achieve the objectives (e.g., prescribed burning, road decommissioning, monitoring), based on the best available information and technology at the time of plan development. As new information, technology, or practices become available or established, certain management actions may be added, modified, or discontinued to incorporate the best available science using an adaptive management approach. Any modified or new actions would be consistent with the plan objectives. Also, if new information shows that an action conflicts with an objective, then that action would be discontinued. In other words, the objectives take precedence over the actions in this adaptive approach.

**Allowable Uses:** For the use-oriented programs (e.g., grazing, recreation, and travel management) the RMP also identifies allowable public uses and limitations on these uses.

Some of the decisions identified in this plan would be in effect as soon as the Record of Decision is signed; others may require several years to fully implement. Following approval of the RMP, an implementation strategy will be developed to establish priorities and time lines for implementing the plan.

## 2.2. Alternative Development

The D-E NCA was designated under the Omnibus Public Land Management Act of 2009. Subsequent to the D-E NCA's designation, BLM staff began identifying preliminary planning criteria and planning issues to be addressed through the development of alternatives. Planning criteria and planning issues to be addressed through the development of alternatives were also identified by the public throughout the planning process. Public input was provided through public scoping, which lasted from August 2010 to October 2010. Public comments relevant to the D-E NCA that were received during the scoping periods for the Grand Junction and Uncompahgre Field Offices' RMP revisions were also considered. Other forms of public input included focus groups and survey data provided to the BLM by Colorado Mesa University, travel management comments, meetings of the D-E NCA Advisory Council and additional letters and emails provided to the BLM. The BLM also considered ACEC nominations submitted during any of the three public scoping periods described above.

The legislation establishing the D-E NCA required that an Advisory Council be formed to advise the BLM during development of the RMP. Under the Federal Advisory Committee Act, 5 U.S.C. App. 2, Secretary of the Interior Ken Salazar approved the Council members in December 2010, and the Council convened its first meeting in January 2011.

Once the Advisory Council was in place in January 2011, the BLM began work on developing alternatives for the D-E NCA. BLM staff members from the D-E NCA, Grand Junction Field Office and Uncompahgre Field Office all contributed to this alternatives development process. In addition, cooperating agencies and the D-E NCA Advisory Council were provided with opportunities to provide input to the BLM throughout the alternative development process. From January 2011 through January 2012, the BLM developed four alternatives (including the No Action Alternative) for detailed analysis. In the spring of 2012, the BLM developed a Draft Preferred Alternative (Alternative E) that drew on components of all four alternatives but resulted in a different combination of goals, objectives, allowable uses, and management actions to respond to the purpose and need.

After the public comment period on the Draft RMP in the summer of 2013, the BLM considered public comments and final Advisory Council recommendations to develop a Proposed Plan Alternative. The Proposed Plan Alternative is largely based on the Draft Preferred Alternative, but it also has components from each of the other Draft alternatives.

## 2.3. Alternatives Considered but Eliminated from Detailed Analysis

Some alternatives raised during the scoping process were considered but not carried forward for further analysis. These alternatives were generally addressed by classifying them as follows:

- Those that would be addressed through internal policy or administrative actions

- Those already required by law
- Those that were already being addressed, or would be addressed independently of the current planning process
- Those determined to be beyond the scope of the current planning process. These included alternatives associated with areas outside of the planning area, or broader agency-wide or statewide alternatives.

Below are three alternatives that were proposed by the public during scoping and were considered by the BLM but subsequently eliminated from detailed analysis.

## No-Grazing Alternative

The BLM considered but did not analyze in detail an alternative that would make all 210,012 acres of public land in the planning area unavailable for livestock grazing, because such an alternative is not reasonable, viable, or necessary in light of resource conditions and BLM's consideration of a range of alternatives that includes a meaningful reduction in livestock grazing. Livestock grazing is a well-established use within the BLM's multiple-use mandate under FLPMA and a traditional use of the D-E NCA. Consistent with the 2009 Omnibus Act, the BLM issues and administers grazing leases or permits in the Conservation Area in accordance with the laws applicable to the issuance and administration of such leases and permits on other lands under the jurisdiction of the BLM (Appendix Q).

In accordance with BLM H-1601-1, *Land Use Planning Handbook* (BLM 2005), and BLM I 2012-169, the BLM considered a range of alternatives with respect to both areas that are available and unavailable for livestock grazing and the amount of forage allocated to livestock on an area-wide basis. The range of alternatives considered includes a meaningful reduction in livestock grazing, both through reduction in areas available to livestock grazing and forage allocation. The BLM developed a range of alternatives that sharply defines the issues and provides a clear basis for choice among options by the decision maker. Under Alternative B, the BLM analyzed making 21,589 acres and five grazing allotments unavailable to livestock use, analyzed limiting livestock use to active movement only on 12,756 acres, and analyzed a forage reduction of 4,369 AUMs. Alternative B is also expected to result in future AUM reductions because of limitations on new livestock facilities, reduced forage utilization standards, restrictions on livestock use in riparian areas, and because all vacated or relinquished allotments would be closed.

In addition, all alternatives would allow suitable measures that could include a reduction or elimination of livestock grazing in specific situations where livestock grazing causes or contributes to conflicts with the protection or management of other resource values or uses. Such determinations, which are based on the outcomes of monitoring and land health assessments (LHAs), would be made during site-specific activity planning and associated environmental review. Livestock grazing is authorized by term permits lasting for up to 10 years and permit renewal is a discretionary action dependent on compliance with terms and conditions of the expiring permit, as well as monitoring and rangeland health assessments. During the permit renewal process the BLM may analyze a no grazing alternative at the site-specific level.

Current resource conditions on BLM-administered land, including range vegetation, watershed, and wildlife habitat, as reflected in LHAs, do not warrant prohibition of livestock grazing throughout the D-E NCA. Such a blanket prohibition, in the absence of resource conflicts,

would not meet the purpose and need of this RMP and would be inconsistent with the policy objectives of the D-E NCA. However, as described above, the range of alternatives does include a meaningful reduction in grazing throughout the D-E NCA. For the purpose of this analysis, the range of alternatives in livestock grazing management provide for consideration of substantially reduced grazing on the public lands. Impacts from such a management approach are described in Chapter 4 of this document.

## **Designate Additional Wilderness Study Areas**

An alternative that designates additional WSAs is not analyzed in detail, because the BLM's authority for establishing WSAs ended in 1993. Under Sections 201 and 202 of the FLPMA, BLM maintains an inventory of all public lands and their resources, including wilderness characteristics, and considers such information during land use planning. The results of the BLM's most recent updated inventory of these non-WSA lands for wilderness character (BLM 2012k) can be found on the D-E NCA website: <http://1.usa.gov/1qKkMVi>. The BLM has analyzed alternatives in this Proposed RMP that include allocations and actions to protect lands with wilderness characteristics.

## **Describe Existing and Reasonably Foreseeable Energy Development**

During the public scoping period, the BLM received a public comment requesting that the RMP include a full inventory of 1) any current leases within the NCA; 2) land potentially available for future leases; and 3) the reasonably foreseeable development for each parcel already leased, or parcels that could potentially be leased. The Omnibus Act withdrew the D-E NCA from all forms of entry, appropriation, or disposal under the public land laws; location, entry, and patent under the mining laws; and operation of the mineral leasing, mineral materials, and geothermal leasing laws (Appendix Q). These withdrawals preclude future energy development or leasing within the D-E NCA. Although there were two existing oil and gas leases within the D-E NCA at the time of the area's designation in 2009, these leases have since expired. One mining claim does currently exist within the D-E NCA; however, the validity of this claim has not been proven.

As a result of the information above, the BLM determined that current future energy development did not need to be addressed or analyzed in detail within this RMP.

## **2.4. Management Common to All Alternatives**

The D-E NCA will be managed across all alternatives for consistency with the D-E NCA's guiding legislation, the Omnibus Act (Appendix Q). The Omnibus Act stresses conservation and protection of the "unique and important resources and values of the land" as the purpose of the D-E NCA's designation. These resources and values are geological, cultural, archaeological, paleontological, natural, scientific, recreational, wilderness, wildlife, riparian, historical, educational, and scenic, as well as the D-E NCA's water resources. To meet the intention of the Omnibus Act, these resources are to be conserved and protected across all alternatives. Trade-offs between resources occur across the alternatives. However, significant degradation or exclusion of any of the D-E NCA's purposes was not considered reasonable given the Omnibus Act's founding legislation (Appendix Q).



The Omnibus Act outlined additional requirements for the management of the D-E NCA. For example, the Act specifies that motorized travel will be limited to designated routes within the D-E NCA (Appendix Q). In addition, the Omnibus Act withdrew the D-E NCA from “entry, appropriation, or disposal under the public land laws,” “location, entry and patent under the mining laws” and “operation of the mineral leasing, mineral materials, and geothermal leasing laws” (Appendix Q). These uses are not considered under any of the alternatives outlined below.

The major uses of the D-E NCA are recreation, livestock grazing, science and education. Recreation, science and education were identified as purposes of the D-E NCA’s designation. All three (recreation, science and education) will be emphasized in the D-E NCA regardless of alternative. Livestock grazing was not identified as a purpose of the D-E NCA, however, the Omnibus Act did specify that the BLM “shall issue and administer any grazing leases or permits in the Conservation Area in accordance with the laws (including regulations) applicable to the issuance and administration of such leases and permits on other land under the jurisdiction of the Bureau of Land Management” (Appendix Q). Livestock grazing is a traditional use of the D-E NCA and would continue under all alternatives within the D-E NCA.

Some of the allowable uses and management actions in this Proposed RMP are carried forward from the existing RMP (Alternative A), because there is no impending concern associated with them or they do not need to change. These decisions are common to all **five** alternatives, because a range of alternative decisions is not necessary for every resource or resource use. Other decisions are common only to the action alternatives (Alternatives B, C, D, and the Proposed Plan Alternative). Each alternative emphasizes a slightly different mix of resources and resource uses, but many similarities exist.

All alternatives would involve collaboration through partnerships and communication with other agencies and interested parties to implement the RMP, including outreach and education, monitoring, and project-specific activities (e.g., trail development). In addition, all alternatives do the following:

- Comply with State and Federal laws, regulations, policies, and standards, including the multiple use mandates of the FLPMA.
- Propose implementation actions (day-to-day management, monitoring, and administrative functions) that stem directly from regulations, policy, and law, which are considered in conformance with the RMP alternatives and are not specifically addressed in the alternatives.
- Provide for human safety and property protection from wildfire.
- Designate specific routes for motorized, mechanized, and non-motorized/non-mechanized use.
- Incorporate the Colorado Standards for Public Land Health (BLM 1997 and Appendix D) as goals in the alternatives.
- Authorize livestock grazing in a manner consistent with the Colorado Standards for Public Land Health and Guidelines for Livestock Grazing Management (BLM 1997 and Appendix D).
- Propose actions that sustain habitat in sufficient quantities and quality for viable plant, fish, and wildlife populations.
- Propose continuing the management of existing WSAs in a manner consistent with the BLM’s interim management policy (BLM Manual 6330, BLM 2012e).

- Offer a diversity of recreation opportunities that foster outdoor-oriented lifestyles and add to people's quality of life.
- Propose conserving key scenic vistas that communities and visitors value.
- Apply BMPs, and other site-specific mitigation (e.g., recreation guidelines) to all resource uses (Appendix J and Appendix K).
- Apply BMPs and other site-specific mitigation to minimize erosion, encourage rapid reclamation, retain soils using storm water mitigation practices, maintain soil stability, and support resources.
- Propose collaborating with adjacent landowners, Federal and State agencies, communities, other agencies, and other individuals and organizations as needed to strive toward attainment and monitoring of water quality standards and to provide source water protection.
- Propose collaborating with adjacent landowners, Federal and State agencies, tribes, communities, other agencies, and other individuals and organizations, as needed, to monitor and implement decisions to achieve desired resource conditions.
- Continue to allow research and use of the D-E NCA's scientific resources.
- Provide educational opportunities for visitors and surrounding communities within the D-E NCA.

Some actions apply to all action alternatives (Alternatives B, C, D, and the Proposed Plan Alternative). Examples of these are as follows:

- Utilize a system for articulating, conserving and tracking the status of unique and important biological values (Planning for Priority Species and Vegetation—PPSV; see Appendix A.)
- Develop a risk management strategy for addressing climate change impacts. This strategy will build upon the PPSV approach, and include a vulnerability assessment for each PPSV element and its nested species. Part of the vulnerability assessment will include documentation of known sources of uncertainty and data needs, which will be identified as science and research priorities within the NCA. The vulnerability assessment will help direct implementation-level actions by identifying priorities and by clarifying what types of projects are needed to address PPSV goals in light of a changing climate. While the Management Objectives, Management Actions, and PPSV matrix provide a vision, the general scope of management actions, and a definition of success, the risk management strategy will augment these with more specific information on mitigating climate change impacts.
- Monitor to provide current information on condition of the unique and important values within the D-E NCA, and information on the authorized uses and other factors which may be affecting these values. Monitoring will be guided by a monitoring strategy that will be outlined as part of the implementation process.
- Ensure that visitors to the D-E NCA will not be exposed to unhealthy or unsafe human-created conditions under all alternatives.
- Seek to achieve a minimum level of conflicting user interactions between recreation participants in order to 1) allow other resources/programs to achieve their objectives 2) curb illegal trespass and property damage; and 3) maintain a diversity of recreation opportunities.

- Evaluate applications for special recreation permits using permit evaluation factors and a permit classification system (see Appendix I).
- Ensure that recreation trail construction follows the BLM's BMPs, including trail design criteria (Appendix K).

## 2.5. Summary Description of Alternatives

The five alternatives summarized in Table 2.1 below and described in the text that follows were developed to represent five alternative ways of managing a national conservation area within the bounds of the Omnibus Act and the other planning criteria and legislative constraints described in section 1.6, Planning Criteria and Legislative Constraints. In general, these alternatives vary in the following ways (note that this should not be considered an all-inclusive list):

- The extent to which the BLM would pursue preservation of paleontological and cultural resources
- The degree to which the BLM would pursue restoration and protection of biological resources
- The number and type of restrictions on allowable uses such as recreation, livestock grazing, and rights-of-way
- The intensity of allowed recreation and livestock grazing use
- The types of recreational outcomes, activities, and settings to be managed for
- The level of emphasis on science and education
- The wilderness values that would be the focus of management within the Wilderness
- The number and size of special designations

**Table 2.1. Summary Comparison of Alternatives**

	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<b>Surface Disturbance Restrictions</b>					
<b>Prohibit surface-disturbing (PSD) activities</b>	0	107,740	86,876	60,437	48,160
<b>Application of site-specific relocation (SSR) to surface-disturbing activities</b>	0	17,539	60,734	46,801	98,881
<b>Timing limitations (TLs) for surface-disturbing activities</b>	0	24,506	31,450	17,753	39,358
<b>Unplanned Wildland Fire Management</b>					

	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Allow unplanned ignitions to be managed for multiple benefits (including resource benefits)	167,772	208,568	181,308	166,557	208,568
Do not allow unplanned ignitions to be managed for multiple benefits (including resource benefits)	41,783	1,423	28,680	43,430	1,427
<b>Lands with Wilderness Characteristics</b>					
Lands managed for wilderness characteristics (outside of designated wilderness and WSAs)	0	21,816 (4 units)	0	0	13,597 (2 units)
<b>Visual Resource Management</b>					
Visual Resource Management Class I	69,238	93,468	71,679	107,636	82,830
Visual Resource Management Class II	36,769	116,519	138,308	102,351	127,169
Visual Resource Management Class III	104,871	0	0	0	0
<b>Recreation Management</b>					
Designated as special recreation management areas (SRMAs)	0	0	38,719 (two SRMAs)	90,662 (nine SRMAs)	34,032 (three SRMAs)
Designated as extensive recreation management areas (ERMAs)	0	109,979 (six ERMAs)	0	37,523 (one ERMA)	94,073 (four ERMAs)
Not designated as a recreation management area	210,012	100,006	171,269	81,785	81,908
Open to hunting (entire D-E NCA, 210,172 acres) but closed to recreational target shooting	15	210,012	104,999	156,942	9,995
<b>Livestock Grazing Allocations</b>					
AUMs ("animal unit months"—see Glossary for definition)	14,403	10,034	14,185	14,416	14,349
Available for livestock grazing	204,921	188,389	209,059	209,617	206,127

	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Of available acres; limited to livestock active movement use only (previously allotted)	8,141	12,756	12,097	6,275	11,938
Limited to livestock active movement use only (previously unallotted)	0	0	5,056	0	3,572
Closed to all livestock use	0	21,589	918	361	3,850
Unallocated	5,056	0	0	0	0
<b>Travel Management</b>					
Motorized travel limited to designated routes (seasonally closed)	126,021	74,873	80,685	80,685	80,685
Seasonally closed to motorized travel	14,716	44,436	63,441	63,441	63,441
Closed to motorized travel (Wilderness Lands)	66,280	66,280	66,280	66,280	66,280
Closed to motorized travel (non-Wilderness Lands)	2,983	24,729	0	0	0
Open to mechanized cross-country travel	140,737	0	0	0	0
Mechanized travel limited to designated routes (year-round)	0	74,873	80,685	80,685	80,685
Seasonally closed to mechanized travel	0	44,436	63,441	63,441	63,441
Closed to mechanized travel (Wilderness lands)	66,280	66,280	66,280	66,280	66,280
Closed to motorized travel (non-Wilderness lands)	2,983	24,729	0	0	0
Horse and foot travel limited to designated routes	0	0	1,586	0	0
Horse travel limited to designated routes	0	0	0	0	1,586
<b>Lands and Realty</b>					
Right-of-way avoidance area	12,066	0	0	118, 784	1,022
Right-of-way exclusion area(exceptions apply; see Chapter 2)	91,327	210,012	209, 086	90,290	208, 990

	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<b>Designated utility corridors</b>	0	0	926	926	0
<b><i>Special Designations</i></b>					
<b>Areas of critical environmental concern</b>	1,900 (two ACECs)	0	12,823 (three ACECs)	29,663 (four ACECs)	9,011 (four ACECs)
<b>Area designated as the Old Spanish National Historic Trail management corridor</b>	0	23,131 acres	23,131 acres	23,131 acres	23,131 acres
<b>Area managed as suitable for inclusion in the National Wild and Scenic Rivers System</b>	0	9,027 acres (3 segments; 33.5 miles)	26,026 acres (10 segments; 106.2 miles)	0	3,728 acres (one segment; 14.1 miles)
<b>Watchable wildlife areas</b>	0	0	0	11,202 (one area)	11,202 (one area)

### 2.5.1. Alternative A (No Action)

Alternative A would continue current management under existing guidance, including the 1987 Grand Junction RMP (BLM 1987) as amended; the 1989 Uncompahgre Basin RMP (BLM 1989a) as amended; the Omnibus Act; and the BLM's interim management policy for the D-E NCA and Dominguez Canyon Wilderness (BLM 2010a). In cases where the existing guidance in the Uncompahgre Basin and Grand Junction RMPs conflicts with the language of the Omnibus Act (as well as the BLM's interpretation of the Omnibus Act in the D-E NCA's Interim Management Policy), this alternative reflects the language of the Omnibus Act. Alternative A is a valid course of action that has resulted in the continued presence of the unique and important resources of the D-E NCA. However, this alternative no longer meets the purpose and need for management of the area.

Management of Resources: Under this alternative, the BLM would seek to achieve the Colorado Standards for Public Land Health. Cultural, geological and paleontological resources would be managed in accordance with Federal and State law, regulation and policy.

Wilderness Resource Management: The Wilderness would be managed consistent with the Wilderness Act of 1964 and BLM Manual 6340 (BLM 2012d). No additional guidance would be provided to the manager. The BLM would not make a commitment to protecting wilderness characteristics outside of the designated Wilderness and Wilderness Study Areas.

Recreation: Recreation would be managed to provide opportunities for dispersed and multiple-use activities, to prevent user conflict and to ensure public health and safety. Additional commitments to recreation (i.e., outcome-based management) would not be sought. Recreation could be restricted to meet BLM legal obligations. The BLM would manage recreation in this alternative commensurate with livestock grazing operations throughout the D-E NCA.

Science and Education: New education or interpretive facilities and opportunities, as well as new educational partnerships, would not be emphasized. Current scientific research would be allowed to continue, in so far as this research improves general understanding of the D-E NCA's resources.

Livestock Grazing: Under this alternative, there would be few land use plan decisions regarding livestock grazing. Instead, most decisions regarding livestock grazing would be made through the existing site-specific grazing permit renewal process. Under this alternative, intensive management and development for livestock grazing would continue as it has in the past. Site-specific adjustments to management of livestock grazing could be made on the basis of resource condition and monitoring results.

Special Designations: All segments eligible for wild and scenic river designation would remain eligible under this alternative. The BLM would continue to manage its existing ACECs in Escalante Canyon and the Gunnison Gravels. The BLM would not designate a trail management corridor for the Old Spanish National Historic Trail or provide management guidance for the trail segments that occur within the D-E NCA.

Travel Management: All inventoried routes outside of the Wilderness and WSA would remain open to some form of motorized use. The exception would be for routes that have already been closed to motorized use through prior decision processes.

## **2.5.2. Alternative B**

Under this alternative, the BLM would rely on natural processes and use restrictions on allowable uses to conserve and protect the resources of the D-E NCA, implementing fewer active management techniques in addressing biological and recreation issues within the D-E NCA.

Management of Resources: Under this alternative, the BLM would implement fewer active management techniques in addressing biological and recreation issues with the DE NCA, relying on natural processes and use restrictions on allowable uses in order to conserve and protect the resource of the DE NCA. The health of some biological indicators would be expected to improve over time as a result of restrictions on allowable uses (particularly restrictions on recreation and livestock grazing). Management of geological, cultural and paleontological resources would follow BLM policy and guidance with a higher level of protection expected as a result of new restrictions on uses.

Wilderness Resource Management: The wilderness area would be managed with an emphasis on the untrammeled wilderness value (i.e., few, if any, manipulations by the BLM) and with an emphasis on opportunities for primitive and unconfined recreation. The BLM would commit to protecting wilderness characteristics in four inventoried areas outside of the designated Wilderness and WSA.

Recreation: A large proportion of the D-E NCA would be designated as multiple-use ERMAs. In these areas, the BLM would target specific recreational activities but would not make a commitment to specific recreation outcomes or settings. Throughout the D-E NCA, recreation would be restricted in order to meet cultural and biological resource objectives.

Science and Education: Education would have low emphasis in this alternative, which is an emphasis that is comparable to the No Action Alternative. The BLM would provide learning opportunities but would not emphasize interpretation and would not allocate areas as outdoor classroom/education emphasis areas. Under this and other action alternatives, the BLM would seek to improve understanding of the socioeconomic impacts and benefits associated with the D-E NCA, using recreation-tourism partnerships to monitor visitor use and physical qualities in RMAs. With respect to baseline ecosystem knowledge, Alternative B would continue basic

trend and baseline monitoring as implemented under the No Action Alternative. Under this and other action alternatives, the BLM would require that external research completed on the NCA be accompanied by reports, in order to maximize benefits of application to management and the wider scientific community.

Livestock Grazing: Livestock grazing would be restricted to meet cultural and biological resource objectives. Allotments that have a relatively high percentage of their lands not meeting Colorado Public Land Health Standards (greater than 25 percent of lands within the allotment) would be closed to livestock use. Domestic sheep grazing would not be allowed within the D-E NCA in order to reduce the possibility of disease transmission to desert bighorn sheep. Allotments that are currently allocated for domestic sheep grazing would be converted to cattle allotments. Livestock would be excluded from riparian areas, or limited to active movement use only in riparian areas. New livestock developments would only be authorized to prevent degradation to D-E NCA resources, and no new livestock developments would be allowed in the Wilderness.

Special Designations: Parts of the Gunnison River and Cottonwood Creek would be managed as suitable for wild and scenic river designation. All ACEC designations would be removed, and no new ACECs would be designated. The Hunting Ground area of the D-E NCA would be established as the Old Spanish NHT Management Corridor and managed for auto-tour interpretive opportunities along Highway 50 and county-maintained roads.

Travel Management: The density of travel routes would be reduced compared to conditions under Alternative A, because routes that have unacceptable/undesirable impacts on resources, as well as redundant and dead-end routes, would be closed. Closed routes would be allowed to degrade over time with little to no active rehabilitation.

### **2.5.3. Alternative C**

Under this alternative, the BLM would use active management for biological restoration and cultural resource protection. The BLM would manage toward more ambitious desired future conditions for biological resources in this alternative.

Management of Resources: Active management of biological resources (e.g., prescribed fire, vegetation treatments, or site rehabilitation) would be emphasized in this alternative. The objective would be to move indicators for priority species and vegetation that are currently in “fair” condition toward “very good” condition and to move indicators for priority species and vegetation that are currently in “poor” condition toward “good” condition. Restrictions on uses or types of uses would be implemented for the purpose of reducing disturbance in areas with sensitive cultural and biological resources.

Protection of cultural resources would be emphasized in this alternative. Management of geological and paleontological resources would be similar to the No Action Alternative.

Wilderness Resource Management: Management of the Wilderness would emphasize the protection of naturalness, supplemental values (cultural resources and threatened and endangered species), and outstanding opportunities for solitude. The BLM would not make a commitment to protecting wilderness characteristics outside of the designated Wilderness and WSA.

Recreation: Recreation management would be geared toward recreational outcomes and experiences that are most consistent with biological restoration and cultural resource protection. Much of the D-E NCA would not be managed as recreation management areas. In these areas



recreation would be managed to prevent user conflict and ensure public health and safety. There would be no protection of recreation settings, activities and outcome opportunities. Only two areas (the Gunnison River and Cactus Park) would be managed as special recreation management areas under this alternative.

Science and Education: On-site interpretation and education would be minimal in order to prevent vandalism and damage to resources. Instead, off-site interpretation would be encouraged to increase understanding of the purposes of the D-E NCA; however, the BLM would manage two outdoor classroom/education emphasis areas. Under this alternative, in both designated RMAs, the BLM would implement a more ambitious monitoring schedule of visitor use and satisfaction, in order to improve understanding of the socioeconomic impacts of the DE-NCA. With respect to baseline ecosystem knowledge, research would be more emphasized in comparison to the No Action Alternative. Under this and other action alternatives, the BLM would require that external research completed on the NCA be accompanied by reports, in order to maximize benefits of application to management and the wider scientific community.

Livestock Grazing: Livestock grazing would be intensively managed to help improve the condition of biological indicators. AUMs could be reduced if vegetation treatments are insufficient to achieve biological resource objectives. Sheep grazing would be prohibited in allotments identified as “high probability” allotments for interaction between domestic sheep and bighorn sheep. These “high probability” allotments would be converted to cattle allotments. Livestock use would be limited to active movement only in most (but not all) riparian areas. Up to 17 new livestock water developments would be authorized within the Wilderness.

Special Designations: All eligible segments for wild and scenic river designation would be managed as suitable for wild and scenic river designation. The Escalante Canyon ACEC would carry forward from current management in this alternative, and two new ACECs (River Rims ACEC and Big Dominguez Canyon ACEC) would be designated to promote recovery and delisting of the Colorado hookless cactus (*Sclerocactus glaucus*). The Hunting Ground area of the D-E NCA would be established as the Old Spanish NHT Management Corridor and managed for auto-tour interpretive opportunities along Highway 50 and county-maintained roads.

Travel Management: The density of travel routes would be the most heavily reduced in this alternative, because routes that conflict with resource protection, redundant and dead-end routes, and the highest overall numbers of miles of route would be closed. Closed routes would be rehabilitated to return to a more natural state.

## 2.5.4. Alternative D

Under this alternative, the BLM would make a commitment to trail-based recreation and specific recreation outcomes and settings (SRMA-style management). In managing natural and biological resources, the BLM would focus on active restoration, but goals would be slightly less ambitious than with Alternative C, to allow for trail-based recreation.

Management of Resources: Active management for biological resources would also be encouraged in this alternative (e.g., prescribed fire, vegetation treatments, or site rehabilitation). However, in this alternative, objectives would be less ambitious than in Alternative C. The main objective of restoration would be to move indicators for priority species and vegetation that are currently in “fair” condition toward “good” condition and to move indicators for priority species

and vegetation that are currently in “poor” condition toward “fair” condition. There would be fewer restrictions on uses or types of uses in this alternative than under Alternatives B and C.

The emphasis of cultural resource management would be on mitigation in high-use areas and heritage education in areas identified for that use. Geological and paleontological resources would be managed similarly to under Alternative A (No Action Alternative).

Wilderness Resource Management: The wilderness would be divided into zones. Wilderness management would vary significantly by zone. Wilderness Zone 1 (lower Big and Little Dominguez Canyons) would be managed with an emphasis on protecting and restoring supplemental values (cultural and threatened and endangered species). Wilderness Zone 2 (includes Horse Mesa, Triangle Mesa, Star Mesa and upper Big and Little Dominguez Canyons) would be managed with an emphasis on undeveloped nature and outstanding opportunities for solitude. Wilderness Zone 3 (the southeastern portion of the Wilderness) would be managed with an emphasis on providing opportunities for primitive and unconfined recreation. The BLM would not make a commitment to protecting wilderness characteristics outside of the designated Wilderness and WSA.

Recreation: Recreation management would be geared toward a wide variety of recreation experiences and outcomes. A large percentage of the D-E NCA (nine areas—the Hunting Ground, the Gunnison River, Cactus Park and Ninemile Hill, the Gunnison Slopes, East Creek, Escalante Canyon, Sawmill Mesa, and Cottonwood Canyon) would be designated as an SRMA, where management would be tied to specific outcomes and settings. Trail-based recreation would be most emphasized in this alternative.

Science and Education: Education would be most encouraged in this alternative, and the BLM would manage five outdoor classroom/education emphasis areas. Under this alternative, in most RMAs, the BLM would implement a more ambitious monitoring schedule of visitor use and satisfaction, in order to improve understanding of the socioeconomic impacts of the DE-NCA. As in Alternative C, research would be more emphasized in comparison to the No Action Alternative. Under this and other action alternatives, the BLM would require that external research completed on the NCA be accompanied by reports, in order to maximize benefits of application to management and the wider scientific community.

Livestock Grazing: The most land would be open to livestock grazing in this alternative, and all unallotted acres would be reopened to livestock grazing. Grazing would be managed to help meet objectives for biological resources, and to help meet recreation objectives. Some mitigation measures would be adopted to reduce the risk of disease transmission between domestic sheep and goats and desert bighorn sheep; however, the entire D-E NCA would be open to domestic sheep grazing. Up to 17 new livestock water developments would be authorized within the Wilderness.

Special Designations: All eligible river segments for wild and scenic river designation would be released from eligibility. Both existing ACECs (Gunnison Gravels and Escalante Canyon) would be carried forward and expanded. Two new ACECs would be designated (Gunnison River ACEC and Gibbler Mountain ACEC) to protect resources in areas where resources warrant special management and recreation is expected to affect those resources. The Hunting Ground area of the D-E NCA would be established as the Old Spanish NHT Management Corridor and managed for premier trail retracement experiences and auto-tour interpretive opportunities along Highway 50 and county-maintained roads.

Travel Management: More existing routes would be designated to public use in this alternative than in Alternatives B and C. In areas managed as SRMAs for trail-based recreation, the construction of additional routes and the connection of existing routes would be a management priority. Closed routes would be rehabilitated to return to a more natural state.

## 2.5.5. Proposed Plan Alternative

The Proposed Plan Alternative is largely based on the Draft Preferred Alternative (Alternative E), which was a blend of management approaches considered under other alternatives. Management approaches unique to this alternative were adopted to better resolve conflicts based on the impact analysis in the Draft RMP, public comments, and Advisory Council recommendations.

Management of Resources: Active management for biological resources would be encouraged in this alternative, allowing for a wide range of tools to improve indicators of biological resource health (e.g., prescribed fire, vegetation treatments, or site rehabilitation). In this alternative, objectives would be less ambitious than in Alternative C but more ambitious than in Alternative D. The main objective of restoration would be to move indicators for priority species and vegetation that are currently in “poor” or “fair” condition toward “good” condition, and to maintain resources in “good” and “very good” condition where those conditions currently exist. There would be relatively fewer restrictions on uses or types of uses in this alternative than under Alternatives B and C, but there would be more restrictions than under Alternative D.

Protections for cultural resources would be fewer than in Alternatives B and C but would be more than Alternative D. Four areas would be managed as heritage areas to protect their heritage values at the landscape level. This management decision orients management toward the concept of these areas being managed as cultural landscapes, which has been encouraged through ongoing tribal consultations. Geological and paleontological management focuses on retaining the geological and paleontological features within the D-E NCA.

Wilderness Resource Management: The wilderness would be divided into zones. Wilderness management would vary significantly by zone. Although wilderness values would be protected throughout the Wilderness, certain values would receive priority for stewardship in each zone. Wilderness Zone 1 (lower Big and Little Dominguez Canyons) would be managed with an emphasis on naturalness and supplemental values (cultural resources and threatened and endangered species). Wilderness Zone 2 (includes Horse Mesa, Triangle Mesa, Star Mesa and upper Big and Little Dominguez Canyons) would be managed with an emphasis on naturalness and outstanding opportunities for solitude. Wilderness Zone 3 (the southeastern portion of the Wilderness) would be managed with an emphasis on naturalness and providing opportunities for primitive and unconfined recreation. In each zone, active management to emphasize the identified wilderness values would be balanced by the BLM’s commitment to also protect the untrammeled nature of the Wilderness. The BLM would make a commitment to protecting wilderness characteristics in two of four units (Dry Fork of Escalante and Cottonwood Canyon) outside of the designated Wilderness and WSA.

Recreation: Recreation management would be geared toward a wide variety of recreation activities, experiences and outcomes. Three areas (the Gunnison River, Cactus Park, and Escalante Canyon) would be designated as SRMAs, where management would be tied to specific outcomes and settings. Most other areas of the D-E NCA, with the exception of the Wilderness and lands managed for wilderness characteristics, would be managed as ERMAs, where the BLM would commit to protecting activities but not specific outcomes or settings.

**Science and Education:** The BLM would move beyond simply providing educational opportunities and assess whether or not surveyed visitors are deriving specific education outcomes throughout the D-E NCA, with two areas identified as outdoor classroom/education emphasis areas. Under this alternative, the BLM and partners would use a variety of tools to assess both market and non-market social, economic and recreational impacts of the DE-NCA. As in Alternatives C and D, research would be more emphasized in comparison to the No Action Alternative. Under this and other action alternatives, the BLM would require that external research completed on the NCA be accompanied by reports, in order to maximize benefits of application to management and the wider scientific community.

**Livestock Grazing:** More acres would be allocated for livestock grazing under this alternative than Alternatives B and C but fewer acres than Alternative D. Livestock grazing would be managed to help meet objectives for biological resources. AUMs and timing of use could be reduced if vegetation treatments are insufficient to achieve biological resource objectives. Conflicts between recreation and livestock grazing would be addressed on a case-by-case basis. Mitigation measures would be adopted to reduce the risk of disease transmission between domestic sheep and goats and desert bighorn sheep, with particularly strict mitigation measures in allotments with “high probability” of association between domestic and wild sheep. Up to 11 new livestock water developments may be authorized within the Wilderness in accordance with Section 4(d)(4) of the Wilderness Act and the congressional grazing guidelines.

**Special Designations:** One river segment (Cottonwood Creek) would be identified as suitable for wild and scenic river designation, and all other segments would be released from eligibility. Of the areas currently designated as ACECs, the Escalante Canyon and the Gunnison Gravels ACECs would be carried forward and expanded. Two new ACECs would be designated—River Rims and Gibbler Mountain—to protect rare plants and paleontological resources. The Hunting Ground area of the D-E NCA would be established as the Old Spanish NHT Management Corridor and managed for auto-tour interpretive opportunities along Highway 50 and county-maintained roads.

**Travel Management:** More existing routes would be designated for public use under this alternative than under Alternatives B, C and D. Closed routes would be rehabilitated to return to a more natural state.

## 2.6. Alternatives Matrix

### How to Read the Alternatives Matrix

The Alternatives Matrix (Table 2.3) is written and formatted to show the decisions proposed for each of five alternatives, including goals, objectives, actions, and allowable uses. Each alternative should be viewed as a unique management plan under consideration. The Proposed Plan Alternative is in the last column on the right in the table, and it replaces the Draft Preferred Alternative.

Goals do not vary by alternative. These are therefore shown as one statement that, from left to right in the table, falls under the headings for Alternatives A through the Proposed Plan Alternative. Objectives, actions, and allowable uses may or may not vary by alternative. When they do not vary by alternative, they are generally mandated by law or policy, or the BLM did not believe that a range of alternatives was necessary when considering public and internal comments.

Throughout the Matrix, the following colors are used:

- Black fill with white font is used for section breaks within the matrix.
- Dark grey fill is used for goals, which describe broad direction and desired conditions for each resource or resource use. Text highlighted in white in these cells indicates changes from the Draft RMP.
- Light grey fill is used for objectives, which describe more detailed outcomes or “desired future conditions.” Text highlighted in white in these cells indicates changes from the Draft RMP.
- Management actions and allowable uses have no fill color. Management actions describe efforts that the BLM anticipates taking to achieve objectives, based on the best available information and technology at the time of plan development. Allowable uses identify public uses that are allowed, restricted/limited, or closed. Text highlighted in gray in these cells indicates changes from the Draft RMP.

In the electronic version of this document, the links in Table 2.2 below provide quick access to key sections of the Alternatives Matrix (Table 2.3).

**Table 2.2. Links to Sections in Alternatives Matrix**

<b>Air Resources: row 315</b>	<b>Noxious and Invasive Weeds: row 187</b>
<b>Areas of Critical Environmental Concern: row 565</b>	<b>Recreational Use: row 323</b>
<b>Biological Systems: row 20</b> <ul style="list-style-type: none"> <li>• <b>Priority Species and Vegetation: row 22</b> <ul style="list-style-type: none"> <li>○ Desert Shrub/Saltbush: row 36</li> <li>○ Pinyon-Juniper Woodlands: row 44</li> <li>○ Sagebrush Shrublands: row 50</li> <li>○ Ponderosa Pine: 61</li> <li>○ Mountain Shrublands: row 68</li> <li>○ Riparian: row 73 <ul style="list-style-type: none"> <li>■ Seeps and Springs: row 90</li> <li>■ Aquatic Systems: row 100</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• D-E NCA-Wide Recreation: row 325</li> <li>• Hunting Ground Recreation Management Area (RMA): row 347</li> <li>• Gunnison River RMA: row 361</li> <li>• Ninemile Hill RMA: row 380</li> <li>• Cactus Park RMA: row 395</li> <li>• Gunnison Slopes RMA: row 412</li> <li>• East Creek RMA: row 423</li> <li>• Sawmill Mesa/Wagon Park RMA: row 441</li> <li>• Escalante Canyon RMA: row 454</li> <li>• Cottonwood Canyon/Dry Fork RMA: row 474</li> </ul>
<b>Cultural Resources: row 225</b>	<b>Scenic Resources: row 303</b>
<b>Educational Use: row 498</b>	<b>Scientific Use: row 485</b>
<b>Fire and Fuels: row 195</b>	<b>Soils and Water Quality: row 204</b>
<b>Geological and Paleontological Resources: row 1</b>	<b>Special Status Species and Natural Communities: row 115</b>
<b>Land Tenure and Land Use Authorizations: row 544</b>	<b>Transportation and Travel Management: row 528</b>
<b>Lands with Wilderness Characteristics (outside Dominguez Canyon Wilderness and Remaining Wilderness Study Areas): row 293</b>	<b>Watchable Wildlife Areas: row 629</b>
<b>Livestock Grazing: row 503</b>	<b>Wild and Scenic Rivers: row 617</b>
<b>National Trails: row 601</b>	<b>Wilderness: row 263</b>
<b>Non-Special Status Fish and Wildlife: row 170</b>	<b>Wilderness Study Areas: row 625</b>

Table 2.3. Alternatives Matrix

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
1	<b>Geological and Paleontological Resources</b>				
2	<b>Goal:</b> Conserve and protect the D-E NCA's paleontological resources, unique geologic features, and examples of geologic processes.				
3	<b>Objective:</b> Manage the paleontological resource program to protect significant paleontological values (BLM 1987).	<b>Objective:</b> Maintain the unique geological and paleontological purposes of the D-E NCA by identifying, protecting and preserving fossil sites and unique geologic landforms.			
4	On a case-by-case basis, the BLM would manage to reduce impacts to geological features noted as significant during project analyses. See row 569 for area-specific restrictions for the Gunnison Gravels.	Apply site-specific relocation (See Appendix B, Maps 2-2b, 2-2c, 2-2d, and 2-2p) in areas where outstanding geological features have been identified and could be damaged, including examples of faults, ripple marks, cross-bedding, lithified mud cracks, angular unconformities, or geomorphological features. See row 569 for area-specific restrictions for the Gunnison Gravels.			
5	No similar action in existing RMPs	Conduct geological mapping for outstanding geologic features in the following areas: <ul style="list-style-type: none"> <li>• Escalante Canyon</li> <li>• East Creek</li> <li>• Other areas with potential for damage to outstanding geologic features</li> </ul>			
6	No similar action in existing RMPs	Prohibit the installation of permanent climbing anchors in areas where outstanding geologic features could be damaged.			
7	Require paleontological clearances/surveys and/or mitigation prior to surface-disturbing activities in Potential Fossil Yield Category (PFYC) Class 4 and 5 areas (Map 3–2). Avoid or recover significant resources through the authorization process.	Require paleontological clearances/surveys and/or mitigation prior to surface-disturbing activities in PFYC Class 3, 4 and 5 areas (Map 3–2). Avoid or recover significant resources through the authorization process.	Same as Alternatives A and B	Require paleontological clearances/surveys and/or mitigation prior to bedrock-disturbing activities in PFYC Class 4 and 5 areas, as well as Class 3 areas that are likely to contain high potential for scientifically significant fossils (Map 3–2). Avoid or recover significant resources through the authorization process.	

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
8	No similar action in existing RMPs. Monitoring would be scheduled on a case-by-case basis at the discretion of the BLM.	Prioritize monitoring of known surficial localities of vertebrate or other scientifically important fossils in order to protect these resources from vandalism and theft.			
9	Prohibit the collection of paleontological resources, except where intended for legitimate scientific uses or Native American spiritual or traditional uses, for which documentation is provided to the satisfaction of the responsible management official—see D-E NCA Interim Management Plan (BLM 2010a).			Restrict collecting of vertebrate and trace fossils to scientific purposes and require valid BLM Paleontological Resources Use Permits. Allow recreational (non-permitted) collecting of common invertebrate and plant fossils.	Restrict collecting of vertebrate and trace fossils to scientific purposes and Native American spiritual or traditional uses, and require valid BLM Paleontological Resources Use Permits.
10	Prohibit the collection of rocks, flagstones or other mineral materials in the D-E NCA, except where collection is intended for legitimate scientific uses or Native American spiritual or traditional uses, for which documentation is provided to the satisfaction of the responsible management official—see D-E NCA Interim Management Plan (BLM 2010a).			Allow for casual (noncommercial, non-permitted) collection of rocks and minerals in the D-E NCA.	Do not issue permits for collection of rocks in the D-E NCA, except where collection is intended for legitimate scientific uses or Native American spiritual or traditional uses. For these exceptions, applicants will acquire a permit from the BLM by providing documentation to the satisfaction of the responsible management official.
11	<b>Goal:</b> Increase knowledge of undocumented paleontological and unique geological resources in the D-E NCA.				
12	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Provide for scientific and educational opportunities related to paleontological and geological resources.			
13	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> No similar objective	<b>Objective:</b> Inventory 10% of areas classified as Potential Fossil Yield Category (PFYC) Class 4 and 5 within 20 years of the signing of the ROD.	<b>Objective:</b> Inventory 5% of areas classified as Potential Fossil Yield Category (PFYC) Class 4 and 5 within 20 years of the signing of the ROD.	<b>Objective:</b> Strive to inventory 10% of areas classified as Potential Fossil Yield Category (PFYC) Class 4 and 5 within 20 years of the signing of the ROD.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
14	As information is obtained, specific management will be identified (Uncompahgre Basin RMP 1989).	Continue the ongoing compilation and analysis of all available paleontological resource data and literature to provide an informed basis for understanding paleontological resources within and/or near the D-E NCA and to provide immediate protection for paleontological resources at risk.			Continue the ongoing compilation and analysis of all available paleontological and geological resource data and literature to provide an informed basis for understanding paleontological and geological resources within and/or near the D-E NCA and to provide immediate protection for paleontological resources at risk.
15	No similar action in existing RMPs. Research proposals are considered on a case-by-case basis.	Allow paleontological research under valid BLM paleontological resource use permits and geologic research using a combination of hand tools and mechanical equipment that improves understanding of the resource. Exception: where more restrictive wilderness rules apply.			
16	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Provide public education opportunities through self-guided exploration.	<b>Objective:</b> Provide public education opportunities through self-guided exploration and through interpretation.		
17	No similar action in existing RMPs. Identification of opportunities for interpretation is done on a case-by-case basis.	Identify appropriate off-site interpretation opportunities related to paleontology and geology.	Identify appropriate opportunities for interpretation (both on-site and off-site) related to paleontology and geology		
18	No similar actions in existing RMPs. Sites are allocated for education and interpretive use on a case-by-case basis.	Do not allocate newly identified paleontological sites to on-site education and interpretation.	As sites are identified, allocate appropriate sites (including active or retired research sites) for education and interpretative use by the public.		



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
19	Manage the Gunnison Gravels Research Natural Area as a geologic research and educational site (Gunnison Gravels Research Natural Areas Articles of Designation, 1987)	No similar action.	Provide interpretive sites at the following locations: <ul style="list-style-type: none"> <li>• Gunnison Gravels</li> </ul>	If these areas can be protected in doing so, provide interpretive sites at the following locations: <ul style="list-style-type: none"> <li>• Gunnison Gravels site</li> <li>• Escalante Canyon</li> <li>• Young Egg Locality</li> <li>• Burrit Bone Bed locality</li> </ul>	
20	<b>Biological Systems</b>				
21	This section deals with the biological systems of the D-E NCA. Within this section are subsections dealing with priority species and vegetation (see row 22 below), special status species (row 115 of this matrix), fish and wildlife (row 170), noxious and invasive weeds (row 187), fire and fuels (row 195) and soils and water quality (row 204).				
22	<b>Priority Species and Vegetation</b>				
23	<p>The planning team went through an extensive process to consider priority biological species and communities so that future management could be based on an understanding of species and community relationships. As part of this process, the BLM identified vegetation/habitat types and species (plants or wildlife) that would be priorities for management and would thus require special management consideration and attention. Desert bighorn sheep and Colorado hookless cactus were identified as priority species, as they require special management consideration and attention beyond management of their broader habitat types. Habitat for other special status species, fish and wildlife (including big game) are largely managed through management of the priority vegetation or habitat types listed here.</p> <p>After identifying the key attributes and associated indicators of health for each priority species and vegetation the planning team established standards for each indicator so that its current condition could be summarized as “poor,” “fair,” “good,” or “very good.” The gap between current and desired condition defines objectives for management. Objectives were focused particularly on key attributes that were determined to currently be in “fair” or “poor” condition. For more detail on indicators, please see Appendix A.</p> <p>This planning process is based on the “Planning for Priority Species and Vegetation” training offered by the BLM’s National Training Center.</p>				
24	<b>Goal:</b> Conserve, protect and enhance the natural, riparian, wildlife and water resources of the D-E NCA.				
25	<b>Objective:</b> Manage the public lands to meet Colorado standards for public land health (BLM 1997 and Appendix D).	<b>Objective:</b> Maintain rankings for priority species and vegetation attributes that are currently in “good” or “very good” condition (Appendix A).	<b>Objective:</b> Enhance or maintain all rankings for priority species and vegetation attributes that are currently in “good” or “very good” condition (Appendix A).	<b>Objective:</b> Maintain all rankings for priority species and vegetation attributes that are currently in “good” or “very good” condition to remain in at least “good” condition (Appendix A).	<b>Objective:</b> Enhance or maintain all rankings for priority species and vegetation attributes that are currently in “good” or “very good” condition (Appendix A).

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
26	<b>Objective:</b> Manage the public lands to meet Colorado standards for public land health (BLM 1997 and Appendix D).	<b>Objective:</b> Improve rankings for priority species and vegetation attributes that are currently in “poor” or “fair” condition (Appendix A).	<b>Objective:</b> Enhance the rankings for priority species and vegetation attributes that are currently in “fair” condition to move toward “very good” condition. Enhance the rankings for priority species and vegetation attributes that are currently in “poor” condition to move toward “good” condition (Appendix A).	<b>Objective:</b> Enhance the rankings for priority species and vegetation attributes that are currently in “fair” condition to move toward “good” condition. Enhance the rankings of priority species and vegetation attributes that are currently in “poor” condition to move toward “fair” condition (Appendix A).	<b>Objective:</b> Enhance the rankings for priority species and vegetation attributes that are currently in “fair” or “poor” condition to move toward “good” condition. (Appendix A).
27	No similar action in existing RMPs.	Reassess or re-evaluate priority species and vegetation standards and current condition in association with land health assessments, or on a more frequent basis than land health assessments.			
28	No similar action in existing RMPs. Vegetation treatments are authorized on a case-by-case basis in order to improve wildlife habitat and/or to meet livestock grazing or fuel objectives.	Do not authorize the use of vegetation treatments unless conditions substantially deteriorate and restrictions on allowable uses are insufficient to meet objectives for priority species and vegetation.	Authorize the use of vegetation treatments and/or restrictions on allowable uses to meet priority species and vegetation objectives.	Use vegetation treatments and/or restrictions on allowable uses to meet priority species and vegetation objectives.	
29	No similar action in existing RMPs. Seed mixtures are approved on a case-by-case basis.	Only use native, locally derived plant materials for restoration and revegetation efforts.  Ensure seed mixes are free of State listed noxious weed seeds.	Use only native (not necessarily locally derived) plant materials for restoration and revegetation efforts.  Ensure seed mixes are free of State listed noxious weed seeds.	Use native plant materials for restoration and revegetation efforts when available and not cost prohibitive. If not available, then use of noninvasive, non-native plant materials is permitted.  Ensure seed mixes are free of State listed noxious weed seeds.	All use of plant materials for restoration and revegetation efforts should be designed in order to meet biological objectives. Emphasize the use of native plant materials for restoration and revegetation efforts using the following prioritization criteria:  1. Locally derived 2. Regionally derived 3. Native to ecoregion 4. Native to North America

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					<p>If criteria 1 through 4 are not feasible, use of noninvasive, non-native plant materials may be used outside the Dominguez Canyon Wilderness. Non-native plant materials will not be used within the Wilderness.</p> <p>Ensure seed mixes are free of State-listed noxious weed seeds.</p>
30	Manage allowable uses to achieve land health standards.	Restrict or adjust allowable uses that are currently preventing achievement of priority species and vegetation objectives.	Intensively manage allowable uses that are currently preventing achievement of priority species and vegetation objectives.		Restrict, adjust, or intensively manage allowable uses that are currently preventing achievement of priority species and vegetation objectives.
31	Allow harvesting of plant materials only where such harvesting would improve forest or woodland health, could be implemented in a sustainable fashion, and would not require additional off-road exploration (D-E NCA Interim Management Plan 2009).	Prohibit the collection of plant materials (including firewood) within the D-E NCA, except for personal use by Native American tribal members.	Allow for the authorized collection of plant materials (including firewood) within the D-E NCA, where doing so helps achieve biological and/or cultural resource objectives.		<p>Allow for the authorized collection of plant materials (including firewood) within the D-E NCA, where doing so helps achieve biological and/or cultural resource objectives.</p> <p>Evaluate yearly and designate as-needed firewood collection areas in order to conserve, protect or enhance biological and/or cultural resources, while maintaining the recreational value of this traditional use.</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
32	Continue to grant Christmas tree permits as long as it would be likely to improve forest health, could be implemented in a sustainable fashion, and would not require additional off-road exploration (D-E NCA Interim Management Plan 2009).	Prohibit collection of Christmas trees within the D-E NCA.	Designate Christmas tree cutting areas when and where doing so helps meet goals and objectives established for biological resources in the D-E NCA.	Designate yearly Christmas tree cutting areas to maintain the recreational value of Christmas tree harvesting, while managing to conserve, protect or enhance biological resources.	Designate Christmas tree cutting areas where doing so helps meet goals and objectives established for biological resources in the D-E NCA, and evaluate such areas on yearly basis.
33	No similar action in existing RMPs.	Priority habitats for the D-E NCA are desert shrub/saltbush, pinyon-juniper woodlands, sagebrush shrublands, ponderosa pine, mountain shrub, riparian, seeps and springs, and aquatic systems.			
34	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Reduce habitat fragmentation throughout the D-E NCA, with an emphasis on maintaining or improving corridors for plants, fish and wildlife.			
35	No similar action in existing RMPs.	Reduce route density, where practicable, through travel management decisions.			Reduce route density through travel management decisions in order to minimize habitat fragmentation and to meet PPSV objectives.
36	<i>Desert Shrub/Saltbush</i>				
37	Management of the following special status species is “nested” under management of this vegetation type: white-tailed prairie dog, burrowing owl, kit fox, black-footed ferret, ferruginous hawk, longnose leopard lizard, midget-faded rattlesnake, milk snake, Montrose bladderpod ( <i>Lesquerella vicina</i> ), Colorado desert parsley ( <i>Lomatium concinnum</i> ), and various migratory bird species. In other words, health of these species is tied to health of this vegetation/habitat type.				
38	<b>Goal:</b> Conserve, protect and enhance desert shrub/saltbush vegetative communities and associated wildlife.				
39	<b>Objective:</b> Manage the plant composition of the D-E NCA’s desert shrub/saltbush habitat and vegetation type to achieve Standards 3 (vegetation) and 4 (special status species) of the Colorado standards for public land health (BLM 1997 and Appendix D).	<b>Objective:</b> Improve (through restrictions on allowable uses) the plant composition of the D-E NCA’s desert shrub/saltbush vegetation type to achieve public land health standards and improve the following measures of health in desert shrub/saltbush: <ul style="list-style-type: none"><li>• The percentage of sampled acres containing adequate mixtures of</li></ul>	<b>Objective:</b> Improve the plant composition of the D-E NCA’s desert shrub/saltbush vegetation type to achieve public land health standards and move toward the following management targets: <ul style="list-style-type: none"><li>• 80% (or more) of sampled acres contain adequate mixtures of warm and cold season grasses, shrubs and forbs</li></ul>	<b>Objective:</b> Improve the plant composition of the D-E NCA’s desert shrub/saltbush vegetation type to achieve public land health standards and move toward the following management targets: <ul style="list-style-type: none"><li>• 60% (or more) of sampled acres contain adequate mixtures of warm and cold season grasses, shrubs and forbs</li></ul>	<b>Objective:</b> Improve the plant composition of the D-E NCA’s desert shrub/saltbush vegetation type to achieve public land health standards and move toward the following management targets: <ul style="list-style-type: none"><li>• 80% (or more) of sampled acres contain adequate mixtures of warm and cold season grasses, shrubs and forbs</li></ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
		<p>warm and cold season grasses, shrubs and forbs</p> <ul style="list-style-type: none"><li>• The percentage of sampled acres exhibiting an acceptable composition of understory invasive plant species (&lt;10% relative cover)</li><li>• The percentage of sampled acres meeting land health standard 3</li></ul>	<ul style="list-style-type: none"><li>• 80% (or more) of sampled acres exhibit an acceptable composition of understory invasive plant species (&lt;10% relative cover)</li><li>• 80% (or more) of sampled acres meet land health standard 3</li></ul>	<ul style="list-style-type: none"><li>• 60% (or more) of sampled acres exhibit an acceptable composition of understory invasive plant species (&lt;10% relative cover)</li><li>• 60% (or more) of sampled acres meet land health standard 3</li></ul>	<ul style="list-style-type: none"><li>• 80% (or more) of sampled acres exhibit an acceptable composition of understory invasive plant species (&lt;10% relative cover)</li><li>• 80% (or more) of sampled acres meet land health standard 3.</li></ul>
40	No similar action in existing RMPs. Vegetation treatments are authorized on a case-by-case basis in order to improve wildlife habitat and/or to meet livestock grazing or fuel objectives.	Do not conduct vegetation treatments in desert shrub/saltbush vegetation type (exception: where substantial degradation would occur in the absence of such treatments).	Use vegetation treatments (e.g., introduction of biological controls, chemical treatments, seeding) to improve native vegetation composition and structure in desert shrub/saltbush communities.	Use vegetation treatments (e.g., introduction of biological controls, chemical treatments, seeding) to improve native vegetation composition and structure in desert shrub/saltbush communities. Prior to completing vegetation treatments: establish research or pilot plots in D-E NCA to determine successful treatment prescriptions (exemption: noxious and/or invasive weed treatments); or ensure that likely outcomes are known on the basis of other tests conducted in the region. Use existing research or pilot plots from the D-E NCA or tests being conducted in similar habitats to inform vegetation treatment prescriptions in this vegetation type.	

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
41	No similar action in existing RMPs.	Prohibit disturbance of intact desert shrub/saltbush vegetation for authorized uses that are shown to cause substantial degradation (e.g., sheep bed grounds, livestock active movement, livestock salt and water placement, livestock developments, routes and recreational developments).	Minimize disturbance of intact desert shrub/saltbush vegetation from authorized uses that are shown to cause substantial degradation (e.g., sheep bed grounds, livestock active movement, livestock salt and water placement, livestock developments, routes and recreational developments).		Minimize disturbance of intact desert shrub/saltbush vegetation from authorized uses that are shown to cause substantial degradation (e.g., sheep bed grounds, livestock active movement, livestock salt and water placement, livestock developments, routes and recreational developments). Also minimize ground disturbing fire suppression activities.
42	No similar action in existing RMPs. Existing Fire Management Plans do not allow for fire use in most desert shrub/saltbush areas.	Do not suppress ignitions or portions of fires in desert shrub/saltbush vegetation, unless substantial long term degradation is likely to occur as a result of the fire.	Actively suppress all ignitions in desert shrub/saltbush vegetation except where it can be demonstrated that fire is neutral to or can help achieve biological resource objectives.		Allow unplanned fire for resource benefit where it can be demonstrated that fire is neutral to or can help achieve biological resource objectives.
43	No similar action in existing RMPs. Seasons of grazing use is determined on a case-by-case basis.	Close allotments with highly degraded desert shrub/saltbush vegetation to livestock use.	In areas with degraded desert shrub/saltbush vegetation, avoid grazing use during the critical growth period (generally the period of early April to early October, depending on seasonal conditions) to allow for plant recovery while adequate soil moisture is available. Exception: where use during the critical growth period would help achieve biological objectives.	Continue to determine seasons of grazing use on a case-by-case basis.	To improve conditions in desert shrub/saltbush communities, limit the grazing use period within limited precipitation zones (below 6,000 feet) to October 1 to April 15 in order to avoid active growth, unless otherwise specified in an allotment management plan or grazing use agreement to help achieve biological objectives —e.g., one year of grazing during spring summer followed by 2 years of rest). The change in the grazing use period could be phased in over a 3 year period.
44	<b>Pinyon-Juniper Woodlands</b>				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
45	Management of the following special status species is “nested” under management of this vegetation type: Montrose bladderpod, Grand Junction milkvetch ( <i>Astragalus linifolius</i> ), Naturita milkvetch ( <i>Astragalus naturitensis</i> ), midget-faded rattlesnake, spotted bat, Townsend’s big-eared bat, fringed myotis, northern goshawk, milk snake, longnose leopard lizard and various migratory bird species.				
46	<b>Goal:</b> Conserve, protect and enhance pinyon-juniper woodlands vegetative communities and associated wildlife.				
47	<b>Objective:</b> Manage the D-E NCA’s pinyon-juniper woodlands habitat and vegetation type to achieve Standards 3 (vegetation) and 4 (special status species) of the Colorado standards for public land health (BLM 1997 and Appendix D).	<b>Objective:</b> Manage for public land health standards in the D-E NCA’s pinyon-juniper woodlands and allow natural processes to determine the condition of the following indicators of pinyon-juniper woodland health: <ul style="list-style-type: none"> <li>• The percentage of sampled acres classified as old growth or late seral</li> <li>• The percentage of sampled acres containing adequate mixtures of warm and cold season grasses, shrubs, forbs and trees</li> </ul>	<b>Objective:</b> Manage for public land health standards in the D-E NCA’s pinyon-juniper woodlands and move toward the following conditions in the D-E NCA’s pinyon-juniper woodlands: <ul style="list-style-type: none"> <li>• 55-75% of sampled acres are classified as old growth or late seral</li> <li>• 95% (or more) of sampled acres contain adequate mixtures of warm and cold season grasses, shrubs, forbs and trees</li> </ul>	<b>Objective:</b> Manage for public land health standards and maintain the following conditions in the D-E NCA’s pinyon-juniper woodlands: <ul style="list-style-type: none"> <li>• 46-85% of sampled acres are classified as old growth or late seral</li> <li>• 80% (or more) of sampled acres contain adequate mixtures of warm and cold season grasses, shrubs, forbs and trees</li> </ul>	<b>Objective:</b> Manage for public land health standards in the D-E NCA’s pinyon-juniper woodlands and move toward the following conditions in the D-E NCA’s pinyon-juniper woodlands: <ul style="list-style-type: none"> <li>• 55-75% of sampled acres are classified as old growth or late seral</li> <li>• 95% (or more) of sampled acres contain adequate mixtures of warm and cold season grasses, shrubs, forbs and trees</li> </ul>
48	No similar action in existing RMPs.	Do not allow vegetation treatments in old growth or late seral pinyon-juniper woodlands.	Do not allow vegetation treatments in old growth or late seral pinyon-juniper woodland. Actively suppress wildfire in these areas.	Avoid vegetation treatments and use of planned wildland fire in ancient pinyon-juniper woodlands (note: these stands are more rare than old growth or late seral pinyon-juniper woodlands). In balance with other resource and fire objectives, protect ancient pinyon-juniper woodlands in the case of unplanned wildland fire.	

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
49	No similar action in existing RMPs. Vegetation treatments are authorized on a case-by-case basis in order to improve wildlife habitat and/or to meet livestock grazing or fuel objectives.	Do not conduct vegetation treatments in the pinyon-juniper woodlands vegetation type (exception: where substantial degradation would occur in the absence of such treatments).	Use vegetation treatments (e.g., introduction of biological controls, chemical treatments, seeding, and targeted grazing) as well as planned and unplanned wildland fire to improve plant composition and structure in pinyon-juniper woodland communities.		Use vegetation treatments (e.g., introduction of biological controls, chemical treatments, seeding, and targeted grazing) as well as management of planned and unplanned wildland fire to improve plant composition and structure in pinyon-juniper woodland communities.  Emphasize management in previously treated woodlands.
50	<b>Sagebrush Shrublands</b>				
51	Management of the following special status species is “nested” under management of this vegetation type: Gunnison sage-grouse, Grand Junction milkvetch, Brewer’s sparrow and various migratory bird species.				
52	<b>Goal:</b> Conserve, protect and enhance sagebrush shrublands vegetative communities and associated wildlife.				
53	<b>Objective:</b> Manage the D-E NCA’s sagebrush shrublands habitat and vegetation type to achieve Standards 3 (vegetation) and 4 (special status species) of the Colorado standards for public land health (BLM 1997 and Appendix D).	<b>Objective:</b> Improve the plant composition and structure of the D-E NCA’s sagebrush shrublands to achieve land health standards and improve the following measures of sagebrush shrublands health: <ul style="list-style-type: none"> <li>• The percentage of sampled acres containing adequate mixtures of warm and cold season grasses, shrubs and forbs (&lt;10% relative cover)</li> <li>• The percentage of sampled acres exhibiting an acceptable composition understory invasive plant species</li> </ul>	<b>Objective:</b> Improve the plant composition of the D-E NCA’s sagebrush shrublands vegetation type to achieve public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>• 80% (or more) of sampled acres contain adequate mixtures of warm and cold season grasses, shrubs and forbs</li> <li>• 95% (or more) of sampled acres exhibit an acceptable composition of understory invasive plant species (&lt;10% relative cover)</li> <li>• 95% (or more) of sampled acres have acceptable</li> </ul>	<b>Objective:</b> Improve the plant composition of the D-E NCA’s sagebrush shrublands vegetation type to achieve public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>• 60% (or more) of sampled acres contain adequate mixtures of warm and cold season grasses, shrubs and forbs</li> <li>• 80% (or more) of sampled acres exhibit an acceptable composition of understory invasive plant species (&lt;10% relative cover)</li> <li>• 80% (or more) of sampled acres have acceptable</li> </ul>	<b>Objective:</b> Improve the plant composition of the D-E NCA’s sagebrush shrublands vegetation type to achieve public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>• 80% (or more) of sampled acres contain adequate mixtures of warm and cold season grasses, shrubs and forbs</li> <li>• 95% (or more) of sampled acres exhibit an acceptable composition of understory invasive plant species (&lt;10% relative cover)</li> </ul>



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
		<ul style="list-style-type: none"> <li>The percentage of sampled acres with acceptable levels (less than 50% relative understory cover) of crested wheatgrass</li> <li>The percentage of sampled acres with moderate cover of sagebrush (10-30% cover)</li> </ul>	<p>levels (less than 50% relative understory cover) of crested wheatgrass</p> <ul style="list-style-type: none"> <li>80% (or more) of sampled acres have moderate cover of sagebrush (10-30% cover)</li> </ul>	<p>levels (less than 50% relative understory cover) of crested wheatgrass</p> <ul style="list-style-type: none"> <li>60% (or more) of sampled acres have moderate cover of sagebrush (10-30% cover)</li> </ul>	<ul style="list-style-type: none"> <li>95% (or more) of sampled acres have acceptable levels (less than 50% relative understory cover) of crested wheatgrass</li> <li>80% (or more) of sampled acres have moderate cover of sagebrush (10-30% cover)</li> </ul>
54	No similar action in existing RMPs. Vegetation treatments are authorized on a case-by-case basis in order to improve wildlife habitat and/or to meet livestock grazing or fuel objectives.	Do not conduct vegetation treatments in this vegetation type (exception: where substantial degradation would occur in the absence of such treatments).	Use vegetation treatments (e.g., mechanical treatments, chemical treatments, prescribed fire, reseeding, targeted grazing) to improve plant composition and structure in sagebrush shrublands.		Use vegetation treatments (e.g., mechanical treatments, chemical treatments, planned and unplanned wildfire, reseeding, targeted grazing) to move towards meeting structural habitat guidelines and primary constituent elements of designated critical habitat found within the Gunnison sage-grouse Rangewide Conservation Plan (Gunnison Sage-grouse Rangewide Steering Committee, 2005), or comparable, best available scientific guidance.
55	No similar action in existing RMPs.	No similar action.	Apply vegetation treatments to reintroduce and/or increase cover of sagebrush in old vegetation treatments where it was removed.		

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
56	No similar action in existing RMPs.	No similar action.	Apply vegetation treatments to reintroduce native grass, forb and shrub species in old vegetation treatments where crested wheatgrass is now a dominant species.		<p>Apply vegetation treatments to reintroduce native grass, forb and shrub species in old vegetation treatments where crested wheatgrass is now a dominant species.</p> <p>Prior to completing vegetation treatments: establish research or pilot plots in D-E NCA to determine successful treatment prescriptions (exemption: noxious and/or invasive weed treatments); or ensure that likely outcomes are known on the basis of other tests conducted in the region.</p> <p>Use existing research or pilot plots from the D-E NCA or surrounding region to inform vegetation treatment prescriptions in this vegetation type.</p>
57	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Manage for public land health standards in the D-E NCA's sagebrush shrublands and allow natural processes to determine the condition of the following indicator of sagebrush shrubland health: <ul style="list-style-type: none"> <li>Average size of unfragmented sagebrush shrublands</li> </ul>	<b>Objective:</b> Reduce fragmentation and disturbance in the D-E NCA's sagebrush shrublands to achieve public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>60 acres (or more) is the average size of unfragmented sagebrush shrublands</li> </ul>	<b>Objective:</b> Minimize fragmentation and disturbance in sagebrush parks to achieve public land health standards and maintain the following conditions in the D-E NCA's sagebrush shrublands: <ul style="list-style-type: none"> <li>50 acres (or more) is the average size of unfragmented sagebrush shrublands</li> </ul>	<b>Objective:</b> Reduce fragmentation and disturbance in the D-E NCA's sagebrush shrublands to achieve public land health standards, benefit Gunnison sage-grouse and other sagebrush obligate species and move toward the following management target: <ul style="list-style-type: none"> <li>60 acres (or more) is the average size of</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					unfragmented sagebrush shrublands.
58	No similar action in existing RMPs.	Prohibit the construction of new routes in existing, unfragmented sagebrush shrublands.  No surface disturbance standard exceptions apply, see Appendix B.		Allow for the construction of new routes in existing, unfragmented sagebrush shrublands, as long as one of the following conditions is met: <ul style="list-style-type: none"> <li>Any additional fragmentation of sagebrush shrublands is offset by projects that reduce fragmentation of sagebrush parks elsewhere.</li> <li>New routes are placed on the edge of existing sagebrush shrublands to reduce fragmentation</li> </ul>	Prohibit the construction of new routes in existing, unfragmented sagebrush shrublands 60 acres or larger.  Allow for the construction of new routes in patches smaller than 60 acres only if one of the following conditions is met: <ul style="list-style-type: none"> <li>Any additional fragmentation of sagebrush shrublands is offset by projects that reduce fragmentation of sagebrush parks elsewhere.</li> <li>New routes are placed on the edge of existing sagebrush shrublands to reduce fragmentation.</li> </ul> Reroutes would be placed to avoid encompassing more than half of the perimeter of the patch.
58a	No similar action in existing RMPs.	Reduce fragmentation in existing sagebrush shrublands by closing routes to public use.	Reduce fragmentation in existing sagebrush shrublands by closing routes to public use or by rerouting routes to the edge of sagebrush parks.	No similar action.	Reduce fragmentation in existing sagebrush shrublands by closing routes to public use or by rerouting routes to the edge of sagebrush parks. Prioritize the largest patches in sage-grouse critical habitat.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
59	No similar action in existing RMPs.	Do not actively expand the sagebrush shrubland vegetation type.	Treat pinyon-juniper woodlands to encourage expansion of the sagebrush shrublands vegetation type. Prevent expansion of pinyon-juniper vegetation into existing sagebrush shrublands through use of mechanical treatments or prescribed fire.	Prevent expansion of pinyon-juniper vegetation into existing sagebrush shrublands through use of mechanical treatments or prescribed fire.	On sites where the Ecological Site Description potential is for sagebrush shrublands, prevent expansion of pinyon-juniper vegetation into these areas using mechanical and/or manual treatments, and planned or unplanned wildfire.
61	<i>Ponderosa Pine.</i>				
62	Management of the following special status species is “nested” under management of this vegetation type: northern goshawk, milk snake, spotted bat, Townsend’s big-eared bat, fringed myotis and various migratory bird species.				
63	<b>Goal:</b> Conserve, protect, and enhance ponderosa pine vegetative communities and associated wildlife.				
64	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Manage for public land health standards, while allowing natural processes to influence the following measure of ponderosa pine health:  • Fire regime condition class (FRCC)	<b>Objective:</b> Improve the fire regime condition class in ponderosa pine stands in order to achieve public land health standards and move toward the following management target:  • FRCC 1	<b>Objective:</b> Improve the fire regime condition class in ponderosa pine stands in order to achieve public land health standards and move toward the following management target:  • FRCC 2 trending toward 1	
65	No similar action in existing RMPs. Vegetation treatments are authorized on a case-by-case basis in order to improve wildlife habitat and/or to meet livestock grazing or fuel objectives.	Do not conduct vegetation treatments in this vegetation type (exception: where substantial degradation would occur in the absence of such treatments).	Reduce the amount of ladder fuels and young trees, and reduce tree density in existing ponderosa pine stands with FRCCs of 2 or 3.	Reduce the amount of ladder fuels and young trees, and reduce tree density in existing ponderosa pine stands with FRCC of 3.	Reduce the amount of ladder fuels and young trees, and reduce tree density in existing ponderosa pine stands with FRCCs 2 or 3. Retain larger snags to maintain wildlife habitat function.
66	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Manage for public land health standards, while allowing natural processes to dictate the number and size of ponderosa pine stands in the D-E NCA.	<b>Objective:</b> Increase the area of ponderosa pine woodlands within the D-E NCA, while managing for public land health standards.	<b>Objective:</b> Maintain the current area of ponderosa pine woodland, while managing for public land health standards.	<b>Objective:</b> Manage for the historic area and age class distribution of ponderosa pine woodland, while managing for public land health standards.  Emphasize retention of old-age trees and snags.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
67	No similar action in existing RMPs. Vegetation treatments are authorized on a case-by-case basis in order to improve wildlife habitat and/or to meet livestock grazing or fuel objectives.	Do not conduct vegetation treatments in this vegetation type (exception: where substantial degradation would occur in the absence of such treatments).	Increase current extent of ponderosa pine woodlands through vegetation treatments and natural and prescribed or planned and unplanned wildland fire . Use natural regeneration and active revegetation to achieve diversity in age classes across the landscape.	Maintain current extent of ponderosa pine woodlands through vegetation treatments and natural and prescribed or planned and unplanned wildland fire. Use natural regeneration and active revegetation to achieve diversity in age classes across the landscape.	Identify the historic extent of ponderosa pine woodlands. Where the current extent of ponderosa pine woodlands is shown to have contracted, use vegetation treatments, natural and prescribed and planned and unplanned wildland fire to support the expansion of ponderosa pine woodlands. Use natural and active revegetation to achieve diversity in age classes across the landscape.
68	<b>Mountain Shrublands</b>				
69	Management of the following special status species is “nested” under management of this vegetation type: various migratory birds.				
70	<b>Goal:</b> Conserve, protect and enhance mountain shrub vegetative communities and associated wildlife.				
71	<b>Objective:</b> Manage the D-E NCA’s mountain shrub habitat and vegetation type to achieve Standards 3 (vegetation) and 4 (special status species) of the Colorado standards for public land health (BLM 1997 and Appendix D).	<b>Objective:</b> Manage for public land health standards in the D-E NCA’s mountain shrub communities, while allowing natural processes to determine the age class structure of these communities.	<b>Objective:</b> Manage for public land health standards in the D-E NCA’s mountain shrub communities, while moving toward the following management target: <ul style="list-style-type: none"> <li>• 25% (or more) of the D-E NCA’s mountain shrub communities are within each of the following age classes: early, mid and late seral</li> </ul>	<b>Objective:</b> Manage for public land health standards in the D-E NCA’s mountain shrub communities, while maintaining the following conditions: <ul style="list-style-type: none"> <li>• 15% (or more) of the D-E NCA’s mountain shrub communities are within each of the following age classes: early, mid and late seral</li> </ul>	<i>Same as Alternative D:</i>  <b>Objective:</b> Manage for public land health standards in the D-E NCA’s mountain shrub communities, while maintaining the following conditions: <ul style="list-style-type: none"> <li>• 15% (or more) of the D-E NCA’s mountain shrub communities are within each of the following age classes: early, mid and late seral</li> </ul>
72	No similar action in existing RMPs. Vegetation treatments are authorized on a case-by-case basis in order to improve wildlife habitat and/or to meet livestock grazing or fuel objectives.	Do not conduct vegetation treatments in this vegetation type (exception: where substantial degradation would occur in the absence of such treatments).	Use vegetation treatments, as appropriate, to improve the diversity of age classes in mountain shrub communities.	Use vegetation treatments, as appropriate, to maintain the current diversity of age classes in mountain shrub communities.	Use planned and unplanned fire and vegetation treatments, as appropriate, to maintain or improve the current diversity of age classes in mountain shrub communities.
73	<b>Riparian</b>				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
74	Management of the following special status species is “nested” under management of this vegetation type: bonytail, humpback chub, razorback sucker, Colorado pikeminnow, roundtail chub, bluehead sucker, flannelmouth sucker, green lineage cutthroat trout, canyon tree frog, Northern leopard frog, bald eagle, Western yellow-billed cuckoo, white-faced ibis, American white pelican, black swift, big free-tailed bat, spotted bat, Townsend’s big-eared bat, fringed myotis and various migratory birds and waterfowl.				
75	<b>Goal:</b> Conserve, protect and enhance riparian vegetative communities and associated wildlife.				
76	<b>Objective:</b> Manage the D-E NCA’s riparian resources to achieve Standards 2 (riparian) and 5 (water quality) of the Colorado standards for public land health (BLM 1997 and Appendix D).	<b>Objective:</b> Manage for public land health standards in the D-E NCA’s riparian communities, while improving the following measure of riparian health: <ul style="list-style-type: none"> <li>• The percentage of riparian miles in proper functioning condition (PFC)</li> </ul>	<b>Objective:</b> Manage for public land health standards in the D-E NCA’s riparian communities, while moving toward the following management targets: <ul style="list-style-type: none"> <li>• 95% (or more) of sampled riparian miles are in PFC</li> </ul>	<b>Objective:</b> Manage for public land health standards in the D-E NCA’s riparian communities, while maintaining the following conditions: <ul style="list-style-type: none"> <li>• 80% (or more) of sampled riparian miles are in PFC</li> </ul>	<b>Objective:</b> Manage for public land health standards in the D-E NCA’s riparian communities, while moving toward the following management targets: <ul style="list-style-type: none"> <li>• 95% (or more) of sampled riparian miles are in PFC</li> </ul>
77	<p>Active Movement would be the only livestock use in riparian areas along the following rivers/creeks (See Livestock Grazing section (row 503) for more detail, Map 2–4a):</p> <ul style="list-style-type: none"> <li>• Escalante Creek</li> <li>• Big Dominguez Creek</li> <li>• Little Dominguez Creek</li> </ul> <p>(Existing Allotment Management Plans and permits)</p> <p>No livestock grazing will be allowed in Management Unit 9 (2,772 acres within the D-E NCA) from March 1 to range readiness to accelerate riparian vegetation improvement. Active Movement use will</p>	<p>Close riparian areas along the following creeks to livestock use (See Livestock Grazing section (row 503) for more detail, Map 2–4b):</p> <ul style="list-style-type: none"> <li>• Rose Creek</li> <li>• Upper Escalante Creek</li> </ul> <p>Active Movement would be the only livestock use in riparian areas along the following rivers/creeks (Map 2–4b):</p> <ul style="list-style-type: none"> <li>• Cottonwood Creek</li> <li>• Gunnison River</li> <li>• Big and Little Dominguez Creeks</li> <li>• Dry Fork of Escalante Creek</li> <li>• Lower Escalante Creek</li> </ul>	<p>Close riparian areas along the following creeks to livestock use (See Livestock Grazing section (row 503) for more detail, Map 2–4c):</p> <ul style="list-style-type: none"> <li>• Rose Creek</li> </ul> <p>Active Movement would be the only livestock use in riparian areas along the following rivers/creeks (Map 2–4c):</p> <ul style="list-style-type: none"> <li>• Gunnison River</li> <li>• Big and Little Dominguez Creeks</li> <li>• Dry Fork of Escalante Creek</li> <li>• Escalante Creek below forks</li> <li>• Escalante tributaries above forks</li> </ul>	<p>Active Movement would be the only livestock use in riparian areas along the following rivers/creeks (See Livestock Grazing section (row 503) for more detail, Map 2–4d):</p> <ul style="list-style-type: none"> <li>• Big Dominguez Creek</li> <li>• Dry Fork of Escalante Creek</li> </ul>	<p>To protect riparian values, limit livestock use in riparian areas along the following rivers/creeks to active movement between grazing areas (See Livestock Grazing section (row 503) for more detail, Map 2–4p):</p> <ul style="list-style-type: none"> <li>• Big and Little Dominguez Creeks</li> <li>• Dry Fork of Escalante Creek</li> <li>• Escalante Creek below forks</li> <li>• Escalante Creek above forks</li> <li>• Rose Creek</li> </ul> <p>If land health concerns associated with livestock use are documented along</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
	be confined to established roads and limited as much as possible. No bedding livestock will be permitted in riparian areas to reduce bank disturbance (BLM 1989a).	<ul style="list-style-type: none"> <li>Escalante tributaries above forks</li> </ul>			the Gunnison River or in other riparian areas, limit livestock use in the riparian area to active movement between grazing areas.
78	No similar action in existing RMPs.	Close riparian areas to dispersed camping when conditions are shown to be deteriorating as a result of this use.	Limit camping to designated sites in or near riparian areas.	Limit camping in riparian areas to designated sites when conditions are shown to be deteriorating as a result of this use, on the basis of riparian indicators in Appendix A.	<p>Limit camping to designated sites in the Gunnison River corridor.</p> <p>Limit camping in other riparian areas to designated sites when conditions are shown to be deteriorating as a result of this use, on the basis of riparian indicators identified in Appendix A.</p>
78a	No similar action in existing RMPs.	Prohibit campfires in riparian and wetland areas.	Prohibit campfires in riparian and wetland areas, except at designated or developed campsites.	No similar action.	Prohibit campfires in riparian and wetland areas, except as permitted at designated or developed campsites. See Gunnison River SRMA (row 368) for specific guidance on camping.
79	Physically close and rehabilitate the Dry Fork of Escalante Creek (BLM 1989a).	Minimize travel routes in and crossing riparian and wetland areas. When routes are contributing to continued decline, close these routes.	Minimize travel routes in and crossing riparian and wetland areas. When routes are contributing to continued decline, close and rehabilitate these routes.	<p>Minimize travel routes in and crossing riparian and wetland areas. When routes are contributing to continued decline, do one or more of the following:</p> <ul style="list-style-type: none"> <li>close and rehabilitate</li> <li>relocate the routes</li> <li>re-engineer these routes</li> </ul>	<p>Minimize travel routes in and crossing riparian and wetland areas. When routes are contributing to continued decline, do one or more of the following:</p> <ul style="list-style-type: none"> <li>close and rehabilitate</li> <li>relocate the routes</li> <li>re-engineer these routes</li> </ul> <p>Conduct work with partners (e.g., local governments,</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					trail organizations, user groups, etc.).
80	No similar action in existing RMPs. As a BMP, routes are encouraged to be placed outside of riparian/wetland areas. Riparian crossings are minimized and properly armored to protect crossing locations.	Prohibit new routes in or crossing riparian and wetland areas.	Locate new routes outside of riparian and wetland areas. Minimize the number of crossings and build bridges at necessary crossing locations.	Encourage route placement outside of riparian/wetland areas. Minimize the number of crossings and properly armor or protect crossing locations.	Locate new routes outside of riparian and wetland areas. Minimize the number of crossings and work with partners (e.g., local governments, trail organizations, user groups, etc.) to build bridges or properly armor or protect crossings at necessary crossing locations.
81	Measures designed to mitigate adverse riparian impacts will be required for all surface-disturbing activities (BLM 1989a).  Prohibit surface disturbance in riparian areas (BLM 1987).	Prohibit surface-disturbing activities (See Appendix B, Map 2-1b) within a minimum distance of 150 meters (492 feet) from the edge of the ordinary high-water mark (bank-full stage) of streams possessing lotic riparian characteristics. Where the riparian corridor width is greater than 150 meters (492 feet) from the ordinary high-water mark, prohibit surface-disturbing activities within the riparian zone.	Prohibit surface-disturbing activities (See Appendix B, Map 2-1c) within a minimum distance of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage) of streams possessing lotic riparian characteristics. Where the riparian corridor width is greater than 100 meters (328 feet) from the ordinary high-water mark, prohibit surface-disturbing activities within the riparian zone.	Apply SSR (see Appendix B, Map 2-2d ) restrictions within a minimum of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage) of streams possessing lotic riparian characteristics.	Apply SSR (see Appendix B, Map2-2p) restrictions within a minimum of 100 meters (328 feet) from the edge of the ordinary high-water mark (bank-full stage) of streams possessing lotic riparian characteristics. However, where the riparian corridor width is greater than 100 meters (328 feet) from the ordinary high-water mark, apply SSR restrictions within the riparian zone.



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
82	<p><b>Objective:</b> Manage the D-E NCA's riparian resources to achieve Standards 2 (riparian) and 5 (water quality) of the Colorado standards for public land health (BLM 1997 and Appendix D).</p>	<p><b>Objective:</b> Manage riparian areas to achieve public land health standards and improve the following measures of riparian health:</p> <ul style="list-style-type: none"> <li>• Percentage of sample sites along the Gunnison River with acceptable levels (20% relative cover or less) of invasive plants</li> <li>• Trend in wetland obligate plant species cover along riparian reaches</li> <li>• Percentage of suitable stream reaches that support the historical proportions of age classes and vegetation composition of woody native species (willows and cottonwoods)</li> </ul>	<p><b>Objective:</b> Manage riparian areas for desirable native wetland vegetation composition and structure in order to achieve public land health standards and move toward the following management targets:</p> <ul style="list-style-type: none"> <li>• 80% (or more) of sampled sites along the Gunnison River have acceptable levels (20% relative cover or less) of invasive plants</li> <li>• Gain obligates in more than 5% of riparian reaches (relative to current conditions)</li> <li>• 95% (or more) of suitable stream reaches support historical proportions of age classes and vegetation composition of woody native species (willows and cottonwoods)</li> </ul>	<p><b>Objective:</b> Manage riparian areas for desirable native wetland vegetation composition and structure in order to achieve public land health standards and move toward the following management targets:</p> <ul style="list-style-type: none"> <li>• 60% (or more) of sampled sites along the Gunnison River have acceptable levels (20% relative cover or less) of invasive plants</li> <li>• Loss or gain of obligates from +/- 5 percent of riparian reaches</li> <li>• 80% (or more) of suitable stream reaches support historical proportions of age classes and vegetation composition of woody native species (willows and cottonwoods)</li> </ul>	<p><b>Objective:</b> Manage riparian areas for desirable native wetland vegetation composition and structure in order to achieve public land health standards and move toward the following management targets:</p> <ul style="list-style-type: none"> <li>• 80% (or more) of sampled sites along the Gunnison River have acceptable levels (20% relative cover or less) of invasive plants</li> <li>• Gain obligates in more than 5% of riparian reaches (relative to current conditions)</li> <li>• 95% (or more) of suitable stream reaches support historical proportions of age classes and vegetation composition of woody native species (willows and cottonwoods)</li> </ul>
82a	See the Noxious and Invasive Weeds section of this matrix (row 187) for additional guidance on noxious and invasive weed treatment.				
83	No similar action in existing RMPs. Vegetation treatments are authorized on a case-by-case basis in order to improve wildlife habitat and/or to meet livestock grazing or fuel objectives.	Do not conduct vegetation treatments in this vegetation type (exception: where substantial degradation would occur in the absence of such treatments).	Restore native riparian species in degraded areas by planting, seeding and by relying on natural regeneration associated with flooding and successional processes.		

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
83a	No similar action in existing RMPs.	No similar action.	Prioritize non-native plant treatments to most efficiently achieve biological resource objectives.	Prioritize non-native plant treatments to improve recreation settings.	Within SRMAs: Prioritize non-native plant treatments to most efficiently achieve both biological and recreation objectives.  In all other areas: Prioritize non-native plant treatments to most efficiently achieve biological resource objectives.
83b	No similar action in existing RMPs. Tamarisk ( <i>Tamarix</i> spp.), Russian olive ( <i>Centaurea repens</i> ) and elm (and other woody non-native plants) are currently treated in wetlands and riparian areas through release of biological control agents, and through use of select mechanical and chemical treatments.	Limit mechanical or herbicide treatments to areas that are in danger of substantial degradation.	Treat tamarisk, Russian olive and elm (and other woody non-native plants) with a phased approach. Remove patches of woody non-natives allowing for the establishment of native species in treated patches prior to treating adjacent patches. Conduct active restoration in disturbed patches.	Treat tamarisk, Russian olive and elm (and other woody non-native plants) with a phased approach. Remove patches of woody non-natives to 1) allow for the establishment of native species in treated patches prior to treating adjacent patches and 2) minimize disruption to habitat connectivity. Conduct active restoration in disturbed patches.	
85	No similar action in existing RMPs.	Prohibit firewood harvest or collection in riparian and wetland areas.	Prohibit firewood harvest or collection of native species in riparian and wetland areas (exception: driftwood). Allow for noncommercial (permitted) or commercial harvest of non-native species such as tamarisk or other approved species.		
89	See Soils and Water Quality section (row 204) for guidance on water flow protections.				
90	Seeps and Springs				
91	Management of the following special status species is “nested” under management of this vegetation type: Eastwood’s monkey-flower.				
92	Goal: Conserve, protect and enhance naturally occurring seeps and springs as important landscape features within the D-E NCA.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
93	<p><b>Objective:</b> Manage the D-E NCA's seeps and springs to achieve Standards 2 (riparian) and 5 (water quality) of the Colorado standards for public land health (BLM 1997 and Appendix D).</p>	<p><b>Objective:</b> Manage the D-E NCA's seeps and springs in order to achieve public land health standards and improve the following measures of seep and spring health:</p> <ul style="list-style-type: none"> <li>• 10-year trend in size of wetland/riparian area around naturally occurring seeps and springs</li> <li>• Percentage of naturally occurring seeps and springs with evidence of trampling and human disturbance</li> </ul>	<p><b>Objective:</b> Manage the D-E NCA's seeps and springs in order to achieve public land health standards and move toward the following management targets:</p> <ul style="list-style-type: none"> <li>• 10-year trend toward enlargement of wetland/riparian area around naturally occurring seeps and springs</li> <li>• Less than 5% of naturally occurring seeps and springs have evidence of trampling and human disturbance</li> </ul>	<p><b>Objective:</b> Manage the D-E NCA's seeps and springs in order to achieve public land health standards and move toward the following management targets:</p> <ul style="list-style-type: none"> <li>• Stable 10-year trend of wetland/riparian area around naturally occurring seeps and springs</li> <li>• Less than 20% of naturally occurring seeps and springs have evidence of trampling and human disturbance</li> </ul>	<p><b>Objective:</b> Manage the D-E NCA's seeps and springs in order to achieve public land health standards and move toward the following management targets:</p> <ul style="list-style-type: none"> <li>• Stable 10-year trend of wetland/riparian area around naturally occurring seeps and springs</li> <li>• Less than 5% of naturally occurring seeps and springs have evidence of trampling and human disturbance in the wetland area</li> </ul>
94	No similar action in existing RMPs.	Prohibit surface-disturbing activities (see Appendix B, Map 2-1b) within a minimum distance of 150 meters (492 feet) from the edge of the riparian zone of naturally occurring seeps and springs (lentic riparian areas). This restriction does not apply to the maintenance of existing facilities.	Prohibit surface-disturbing activities (see Appendix B, Map 2-1c) within a minimum distance of 100 meters (328 feet) from the edge of the riparian zone of naturally occurring seeps and springs (lentic riparian areas). This restriction does not apply to the maintenance of existing facilities.	Apply SSR (see Appendix B, Map 2-2d) within a minimum distance of 100 meters (328 feet) from the edge of the riparian zone of naturally occurring seeps and springs (lentic riparian areas).	Apply SSR (see Appendix B, Map 2-2p) within a minimum distance of 100 meters (328 feet) from the edge of the riparian zone of naturally occurring seeps and springs (lentic riparian areas). Also apply SSR to the spring/seep recharge zone where it is determined to extend more than 100 meters from the riparian zone.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
95	No similar action in existing RMPs.	No similar action.	Reclaim nonfunctional spring developments, wells and water catchments in seep and wetland recharge areas.		In spring and seep recharge areas, maintain existing water developments in functional condition where needed to meet livestock management or wildlife needs. Otherwise, reclaim water developments to achieve biological resource objectives where practicable.
96	No similar action in existing RMPs.	Prohibit new spring developments, wells and water catchments in seep and spring recharge areas.	Allow new spring developments, wells and water catchments in seep and spring recharge areas when consistent with biological resource objectives.		For all new water developments, inspect and characterize all springs and seeps located inside the affected watershed, down gradient and within one mile of proposed development. Allow for new water developments when a) surface disturbing actions would not directly impact the source area, b) characterization of the spring/seep indicates recharge potential would not be significantly altered, and c) development would be limited to instances where needed to achieve biological resource objectives.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
97	<b>Objective:</b> Manage the D-E NCA's seeps and springs to achieve Standards 2 (riparian) and 5 (water quality) of the Colorado standards for public land health (BLM 1997 and Appendix D).	<b>Objective:</b> Manage seeps and springs in order to achieve public land health standards and improve the following measures of seep and spring health: <ul style="list-style-type: none"><li>● Percentage of naturally occurring seeps and springs with non-native perennial plants</li><li>● Trend in wetland obligate plant species cover around naturally occurring seeps and springs</li></ul>	<b>Objective:</b> Improve plant composition in and around seeps and springs in order to achieve public land health standards and move toward the following management targets: <ul style="list-style-type: none"><li>● 5% (or less) of naturally occurring seeps and springs have non-native perennial plants</li><li>● Gain wetland obligates in more than 5% of naturally occurring seeps and springs</li></ul>	<b>Objective:</b> Improve plant composition in and around seeps and springs in order to achieve public land health standards and move toward the following management targets: <ul style="list-style-type: none"><li>● 15% (or less) of naturally occurring seeps and springs have non-native perennial plants</li><li>● Loss or gain of wetland obligates from +- 5 percent of naturally occurring seeps and springs</li></ul>	<b>Objective:</b> For seeps and springs that contain rare species and communities, same as Alternative C. For other seeps and springs, same as Alternative D.
98	No similar action in existing RMPs.	No similar action.	Reintroduce appropriate native, wetland obligate plant species to seeps and springs that have been degraded.		Reintroduce appropriate native, wetland obligate plant species to seeps and springs that have been degraded. Emphasize reintroductions in springs and seeps that lack rare species and communities.
99	Categorize seeps and springs as high priorities for weed control. See row 187 of this matrix, Noxious and Invasive Weeds, for more detail on weed control.				
100	Aquatic Systems				
101	Management of the following special status species is “nested” under management of this habitat type: bonytail, humpback chub, razorback sucker, Colorado pikeminnow, roundtail chub, flannelmouth sucker, bluehead sucker, green lineage cutthroat trout, canyon tree frog and northern leopard frog.				
102	<b>Goal:</b> Conserve, protect and enhance hydrologic and aquatic systems and associated fish and wildlife.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
103	<b>Objective:</b> Manage the Gunnison River corridor to achieve Standards 2 (riparian) and 5 (water quality) of the Colorado standards for public land health (BLM 1997 and Appendix D).	<b>Objective:</b> Manage the Gunnison River to achieve public land health standards and improve the following measure of Gunnison River health: <ul style="list-style-type: none"> <li>Percentage of the Gunnison River with evidence of channelization and riprap</li> </ul>	<b>Objective:</b> Improve BLM management of the Gunnison River corridor in order to achieve public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>5% (or less) of the Gunnison River has evidence of channelization and riprap</li> </ul>	<b>Objective:</b> Improve BLM management of the Gunnison River corridor in order to achieve public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>25% (or less) of the Gunnison River has evidence of channelization and riprap</li> </ul>	<i>Same as D.</i>  <b>Objective:</b> Improve BLM management of the Gunnison River corridor in order to achieve public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>25% (or less) of the Gunnison River has evidence of channelization and riprap</li> </ul>
104	No similar action in existing RMPs.	No similar action.	Remove barriers to river channel movement in historically flood prone areas on BLM-administered lands along the Gunnison River to allow for periodic channel movement and the creation of microhabitats (e.g., backwaters, side channels, overflow channels, flooded bottom lands) for aquatic species.		
105	No similar action in existing RMPs.	Prohibit BLM actions that would further restrict natural migration of the Gunnison River.	Minimize BLM actions that would further restrict natural migration of the Gunnison River.		

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
106	<b>Objective:</b> Manage the D-E NCA's water resources to achieve Standards 2 (riparian) and 5 (water quality) of the Colorado standards for public land health (BLM 1997 and Appendix D).	<b>Objective:</b> Manage the water resources of the D-E NCA's perennial creeks and river to meet public land health standards and to maintain or improve the naturalness of these hydrologic regimes.	<b>Objective:</b> Improve BLM management of the water resources of the D-E NCA's perennial creeks and river in order to meet public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>• Shape and timing of spring runoff are comparable to natural conditions</li> <li>• Quantity of water during critical spring runoff periods (4/1- 6/30) is at or above the 75th percentile of pre-dam (Gunnison River) and pre-diversion (tributary creeks) flow rates.</li> </ul>	<b>Objective:</b> Improve BLM management of the water resources of the D-E NCA's perennial creeks and river in order to meet public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>• Shape and timing of spring runoff are comparable to natural conditions</li> <li>• Quantity of water during critical spring runoff periods (4/1- 6/30) is at or above the 50th percentile of pre-dam (Gunnison River) and pre-diversion (tributary creeks) flow rates.</li> </ul>	
107	Engage in collaborative discussions with Gunnison River stakeholders—including Bureau of Reclamation (BOR), National Park Service, water users, Colorado River District, etc.—to manage the flow regime of the Gunnison River to support flow-dependent values (e.g., recreation, riparian, fish).				
108	Make recommendations to the Colorado Water Conservation Board for appropriation of new instream flow water rights or enlargement of existing instream flows on tributary streams to the Gunnison River within the D-E NCA in cases where data show that existing stream flow protection is insufficient to support water-dependent values.				
109	Apply to the Colorado water court for water rights in the name of the Federal Government on all point water sources (e.g., springs, wells, ponds) located on BLM-administered lands within the D-E NCA.				
110	No similar action in existing RMPs.	No similar action.	Work with appropriate local, State, and Federal agencies as well as adjoining land owners to fund and implement watershed restoration projects that would improve overall ecosystem health and contribute to the sustainability of existing State In-Stream Flow Water Rights in tributary creeks.		

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
111	<b>Objective:</b> Manage the D-E NCA’s water resources to achieve Standards 2 (riparian) and 5 (water quality) of the Colorado standards for public land health (BLM 1997 and Appendix D).	<b>Objective:</b> Manage the D-E NCA’s fish habitat to meet public land health standards and maintain the condition of the following measures of fish habitat health: <ul style="list-style-type: none"><li>● <i>Percentage of cold-water fish bearing stream miles that rank as good in the Pfankuch stability rating</i></li><li>● <i>Percentage of historic warm-water habitat in the D-E NCA’s tributary creeks that is accessible to fish residing in the Gunnison River</i></li></ul>	<b>Objective:</b> Improve BLM management of the D-E NCA’s fish habitat in order to meet public land health standards and move toward the following management targets: <ul style="list-style-type: none"><li>● <i>95% (or more) of cold-water fish bearing stream miles rank as good in the Pfankuch stability rating</i></li><li>● <i>There are no unnatural fish barriers between the Gunnison River and warm-water tributary creeks</i></li></ul>	<b>Objective:</b> Improve BLM management of the D-E NCA’s fish habitat in order to meet public land health standards and maintain the following conditions: <ul style="list-style-type: none"><li>● 80% (or more) of cold-water fish bearing stream miles rank as good in the Pfankuch stability rating</li><li>● <i>60% (or more) of historic warm-water habitat in the D-E NCA’s tributary creeks is accessible to fish residing in the Gunnison River</i></li></ul>	<b>Objective:</b> Improve BLM management of the D-E NCA’s fish habitat in order to meet public land health standards and move toward the following management targets: <ul style="list-style-type: none"><li>● <i>95% (or more) of cold-water fish bearing stream miles rank as good in the Pfankuch stability rating</i></li><li>● <i>Improve from current status (61–75%) the extent of historic warm-water habitat in the D-E NCA’s tributary creeks that is accessible to fish residing in the Gunnison River.</i></li></ul>
112	Prohibit in-channel stream work (see Appendix B) in all cold-water occupied trout habitat during spring and fall spawning periods.				
113	No similar action in existing RMPs.	No similar action.	Remove or modify man-made fish barriers between the Gunnison river and tributary creeks as opportunities or partnerships present themselves in order to improve aquatic habitat connectivity.	No similar action.	Remove or modify man-made fish barriers between the Gunnison river and tributary creeks as opportunities or partnerships present themselves in order to improve aquatic habitat connectivity.
114	No similar action in existing RMPs.	Prohibit in-channel stream work (See Appendix B) in warm-water spawning habitat used by flannelmouth sucker, bluehead sucker, and roundtail chub from March 1 to June 30.			
115	Special Status Species and Natural Communities				



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Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
116	<p>The planning team went through an extensive process to identify priority biological species and communities, and to identify indicators and current condition for each of these species and communities so that future management could be predicated on an understanding of species and community relationships. As part of this process, the BLM identified vegetation/habitat types and species (plants or wildlife) that would be priorities for management and would thus require special management consideration and attention.</p> <p>Desert bighorn sheep and Colorado hookless cactus were identified as priority species, as they require special management consideration and attention beyond management of their broader habitat types. For these two priority species, the planning team identified key attributes and associated indicators of health, then established standards for each indicator so that condition of each indicator could be summarized as “poor,” “fair,” “good,” or “very good.” These two species have separate subsections below. The gap between current and desired condition defines objectives for management for these two species. Objectives were focused particularly on key attributes that were determined to currently be in “fair” or “poor” condition. For more detail on indicators, please see Appendix A.</p> <p>Habitat for other special status species, fish and wildlife (including big game) are largely managed through management of the priority vegetation or habitat types (see row 22 of this matrix). Where specific management actions and allowable uses were necessary for protection of other special status species, they can be found below.</p> <p>This planning process is based on the “Planning for Priority Species and Vegetation” training offered by the BLM’s National Training Center.</p>				
117	<b><i>Desert Bighorn Sheep</i></b>				
118	<b>Goal:</b> Conserve, protect and enhance the D-E NCA’s resident population of desert bighorn sheep.				
119	<b>Objective:</b> Maintain and improve habitat for desert bighorn sheep with an emphasis on supporting Colorado Parks and Wildlife (CPW) population goals for the Dominguez-Escalante herd.				
120	Actions affecting desert shrub/saltbush, riparian and pinyon-juniper woodlands are also related to this habitat objective (see row 22 of this matrix).				
121	<b>Objective:</b> No similar objective in existing RMPs. Conflicts between wildlife and livestock operations are resolved on an allotment-by-allotment basis through the grazing permit renewal process.	<b>Objective:</b> There is no probability of interaction between domestic sheep/goats and desert bighorn sheep within the D-E NCA.	<b>Objective:</b> Improve BLM management of the D-E NCA’s domestic sheep in order to meet public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>• <i>There is no overlap between domestic sheep/goats and desert bighorn sheep within “high probability” allotments in the D-E NCA.</i></li> <li>• <i>Probability of interaction between domestic sheep/goats and desert bighorn sheep is reduced in “some probability”</i></li> </ul>	<b>Objective:</b> Improve BLM management of the D-E NCA’s domestic sheep in order to meet public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>• <i>Probability of interaction between domestic sheep/goats and desert bighorn sheep is reduced in “some probability,” “medium probability,” and “high probability” allotments.</i></li> </ul>	<b>Objective:</b> Improve BLM management of the D-E NCA’s domestic sheep in order to meet public land health standards and reduce probability of association and disease transmission between domestic sheep/goats and desert bighorn sheep.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
			<i>and “medium probability” allotments.</i>		
122	No similar action in existing RMPs. Sheep grazing would continue to be authorized on a case-by-case basis through the grazing permit renewal process. Sheep grazing is currently authorized on five allotments within the D-E NCA.	Discontinue current and deny proposed domestic sheep or goat grazing or crossing permits and permit renewals (including active movement). Allow for conversion to cattle grazing permits.	Exclude domestic goat but permit domestic sheep grazing or active movement in occupied bighorn sheep habitat, on an allotment-by-allotment basis using a Probability of Interaction Assessment (See Appendix C, Map 3–12). The Probability of Interaction Assessment may be updated when occupied bighorn habitat changes.	Exclude domestic goat but permit domestic sheep grazing or active movement in occupied bighorn sheep habitat. Manage domestic sheep grazing in occupied bighorn sheep habitat on an allotment-by-allotment basis using a Probability of Interaction Assessment (See Appendix C, Map 3–12). The Probability of Interaction Assessment may be updated when occupied bighorn habitat changes or when new science (e.g., vaccines, monitoring of desert bighorn sheep) provides additional information.	Exclude domestic goat but permit domestic sheep grazing or active movement in occupied bighorn sheep habitat. Manage domestic sheep grazing in occupied bighorn sheep habitat on an allotment-by-allotment basis using a model that assesses probability of association between wild sheep and domestic sheep (See Appendix C, Map 3–12). The risk of association assessment will be updated periodically as occupied bighorn habitat changes or when new science (e.g., vaccines, monitoring of desert bighorn sheep, improved modeling techniques) provides additional information.
123	No similar action in existing RMPs. Sheep grazing would continue to be authorized on a case-by-case basis through the grazing permit renewal process.	No similar action. Domestic sheep or goat grazing would be discontinued.	Manage domestic sheep grazing using (as guidance) the Western Association of Fish and Wildlife Agencies (WAFWA) recommendations for domestic sheep and goat management in wild sheep habitat and the interagency memorandum of understanding (MOU) for wild sheep management.		Manage domestic sheep grazing using (as guidance) the WAFWA recommendations for domestic sheep and goat management in wild sheep habitat and the interagency MOU for wild sheep management.  If monitoring indicates that mitigation measures are not effective at preventing association between domestic/wild sheep in

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					<p>an area of an allotment, then consider the following:</p> <ol style="list-style-type: none"> <li>1. Implement additional measures (using the WAFWA recommendations as guidance) intended to improve effectiveness.</li> <li>2. Remove the area from the allotment</li> <li>3. Combine that portion with adjacent cattle allotment</li> <li>4. Convert allotment to cattle</li> </ol>
124	No similar action in existing RMPs. Sheep grazing would continue to be authorized on a case-by-case basis through the grazing permit renewal process.	No similar action. Domestic sheep or goat grazing would be discontinued.	<p>Manage domestic sheep with the following restrictions in “some probability” allotments (Appendix C, Map 3–12):</p> <ul style="list-style-type: none"> <li>• All ewes must be bred before turn out onto BLM-administered lands.</li> <li>• Mandatory use of at least two guard animals per band to deter comingling.</li> <li>• Only healthy domestic sheep shall be turned out onto BLM-administered lands.</li> <li>• No scheduled lambing of domestic sheep shall occur on BLM-administered lands.</li> <li>• Sweep allotments within 24 hours of moving off to capture any strays.</li> <li>• Use of marker sheep within bands; at least 1/100 hd.</li> <li>• Use only highly gregarious breeds of domestic sheep.</li> </ul>		<p>Manage domestic sheep with the following restrictions in “some probability” allotments (Appendix C, Map 3–12):</p> <ul style="list-style-type: none"> <li>• During domestic sheep permit renewal, assess domestic sheep season of use and bighorn breeding season overlap and make changes, if necessary.</li> <li>• All domestic ewes must be bred before turn out onto BLM.</li> <li>• Mandatory use of at least two guard animals per domestic sheep band to deter comingling.</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
			<ul style="list-style-type: none"> <li>• Require submission of Actual Use Report at the end of grazing season.</li> <li>• Require domestic sheep permittees to report all bighorn sheep sightings to the BLM</li> </ul>		<ul style="list-style-type: none"> <li>• Only healthy domestic sheep shall be turned out onto BLM.</li> <li>• No scheduled lambing of domestic sheep shall occur on BLM lands.</li> <li>• Sweep allotments within 24 hours of moving off to capture any stray domestic sheep.</li> <li>• Use of marker domestic sheep within bands; at least 1/100 head.</li> <li>• Use only highly gregarious breeds of domestic sheep.</li> <li>• Require submission of Actual Use Report at the end of grazing season.</li> <li>• Require domestic sheep permittees to report all bighorn sheep sightings to the BLM.</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
125	No similar action in existing RMPs. Sheep grazing would continue to be authorized on a case-by-case basis through the grazing permit renewal process.	No similar action. Domestic sheep or goat grazing would be discontinued.	Manage domestic sheep with the following restrictions in “some probability” allotments (Appendix C, Map 3–12): <ul style="list-style-type: none"><li>Remove sick, physically disabled or dead domestic sheep from the band on BLM-administered lands within 24 hours of discovery and report this information to the BLM within 24 hours.</li><li>Maintain a band of no greater than 1,500 head.</li><li>No yearling ewes during the domestic sheep breeding season unless bred will be turned onto BLM-administered lands.</li></ul>	Manage domestic sheep with the following restrictions in “some probability” allotments (Appendix C, Map 3–12): <ul style="list-style-type: none"><li>Remove sick, physically disabled or dead domestic sheep from the band on BLM-administered lands as soon as possible after discovery.</li><li>Maintain a band of no greater than 2,000 head, based on manageability by herder.</li></ul>	<i>Same as Alternative D:</i>  Manage domestic sheep with the following restrictions in “some probability” allotments (Appendix C, Map 3–12): <ul style="list-style-type: none"><li>Remove sick, physically disabled or dead domestic sheep from the band on BLM-administered lands as soon as possible after discovery.</li><li>Maintain a band of no greater than 2,000 head, based on manageability by herder.</li></ul>
126	No similar action in existing RMPs. Sheep grazing would continue to be authorized on a case-by-case basis through the grazing permit renewal process.	No similar action. Domestic sheep or goat grazing would be discontinued.	Manage domestic sheep with the following restrictions in “moderate probability” allotments (Appendix C, Map 3–12): <ul style="list-style-type: none"><li>Follow all restrictions identified above for “some probability” allotments</li><li>Require a submission of dead report to be turned in with Actual Use Report.</li><li>No yearling ewes will be turned out during the bighorn sheep breeding season.</li><li>Decrease probability of interaction between bighorn and domestic sheep by creating barriers to movement (fences, herding, etc.), utilizing available topographic and natural barriers where feasible.</li><li>Mandatory use of at least three guard animals per band to deter comingling.</li></ul>	Manage domestic sheep with the following restrictions in “moderate probability” allotments (Appendix C, Map 3–12): <ul style="list-style-type: none"><li>All items in “some probability” plus:</li><li>When opportunities arise, consider changing class of livestock (sheep to cattle or cattle to sheep) in allotments with “moderate probability,” if doing so would reduce risk of association. These allotments would be evaluated on</li></ul>	

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
			<ul style="list-style-type: none"> <li>No domestic rams will be permitted in occupied habitat.</li> </ul>		<p>basis of site-specific domestic/bighorn sheep information and association probabilities.</p> <ul style="list-style-type: none"> <li>No domestic rams will be permitted in occupied habitat.</li> <li>Mandatory use of at least two guard animals per domestic sheep band to deter comingling. Additional guard animals will be determined through coordination between permittee and the BLM, considering WAFWA recommendations, permittee's effectiveness at preventing association in previous years, and recreation conflicts.</li> <li>Require a submission of dead report to be turned in with actual use Report.</li> <li>Decrease risk of association between bighorn and domestic sheep by creating barriers to movement (fences, herding, etc.), utilizing available topographic and natural barriers where feasible.</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
127	No similar action in existing RMPs. Sheep grazing would continue to be authorized on a case-by-case basis through the grazing permit renewal process.	No similar action. Domestic sheep or goat grazing would be discontinued.	<p>Manage domestic sheep with the following restrictions in “moderate probability” allotments (Appendix C, Map 3–12):</p> <ul style="list-style-type: none"> <li>• If domestic sheep enter bighorn sheep occupied range, they must be retrieved within 24 hours.</li> <li>• Buffer may be required depending on available topographic/natural barriers.</li> <li>• Maintain a band size of 1,200 head or less.</li> <li>• During spring use, limit band size to 900 ewes with lambs.</li> <li>• Require a counting report every 2 weeks to report number of sheep. To be turned in with Actual Use Report.</li> </ul>	<p>Manage domestic sheep with the following restrictions in “moderate probability” allotments (Appendix C, Map 3–12):</p> <ul style="list-style-type: none"> <li>• During spring use, limit band size for ewes with lambs. Numbers would be determined at permit renewal based on site-specific information.</li> </ul>	
128	No similar action in existing RMPs. Sheep grazing would continue to be authorized on a case-by-case basis through the grazing permit renewal process.	No similar action. Domestic sheep or goat grazing would be discontinued.	<p>Close “high probability” allotments (Appendix C, Map 3–12) to domestic sheep grazing.</p> <p>This could be achieved by converting the class of livestock to cattle.</p>	<p>Manage domestic sheep with the following restrictions in “high probability” allotments (Appendix C, Map 3–12):</p> <ul style="list-style-type: none"> <li>• Follow all restrictions identified above for “moderate probability” allotments</li> </ul>	<p>Manage domestic sheep with the following restrictions in “high risk” allotments (Appendix C, Map 3–12):</p> <ul style="list-style-type: none"> <li>• All items in “<u>some and moderate probability</u>” plus the following:</li> <li>• Prohibit the changing of cattle to sheep in allotments with “high probability” levels until</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					<p>current science mitigates risk.</p> <ul style="list-style-type: none"> <li>• When opportunities arise, exchange domestic sheep with cattle in allotments with “high probabilities.”</li> <li>• Maintain a domestic sheep band of no greater than 2,000 head based on manageability by herder, and shorten the time period spent close to known bighorn use areas.</li> </ul>
129	No similar action in existing RMPs. Sheep grazing would continue to be authorized on a case-by-case basis through the grazing permit renewal process.	Prohibit conversion of cattle grazing allotments to domestic sheep/goat grazing or active movement in the D-E NCA.	Allow for swapping of allotments with permitted domestic sheep grazing use for allotments with permitted cattle grazing use in order to move domestic sheep grazing from “high probability” or “moderate probability” allotments to “some probability” allotments (Appendix C, Map 3–12). Do not allow swapping of cattle use for sheep use in “high probability” or “moderate probability” allotments.	Allow for swapping of allotments with permitted domestic sheep grazing use for allotments with permitted cattle grazing use in order to move domestic sheep grazing from “high probability” or “moderate probability” allotments to “some probability” allotments. Also allow swapping to move domestic sheep grazing from “high probability” allotments to “moderate probability” allotments (Appendix C, Map 3–12).	<p>Allow for swapping of allotments with permitted domestic sheep grazing use for allotments with permitted cattle grazing use in order to move domestic sheep grazing from “high probability” or “moderate probability” allotments to “some probability” allotments (Appendix C, Map 3–12). Do not allow swapping of cattle use for sheep use in “high probability” or “moderate risk” allotments.</p> <p>Any conversion of an allotment from sheep to cattle will be a one-way, permanent conversion for that allotment.</p>
130	No similar action in existing RMPs.	No similar action.	Coordinate with CPW when proposed bighorn sheep population augmentations may affect BLM permitted activities.		



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
131	<b>Objective:</b> No similar objective in existing RMPs	<b>Objective:</b> Manage the D-E NCA's desert bighorn sheep habitat and manage allowable uses to meet the Colorado Standards for Public Land Health and to support bighorn sheep population objectives identified in CPW herd management plans.			
132	No similar action in existing RMPs.	Domestic non-working dogs must be on leash within bighorn sheep range, as defined by CPW.	Domestic non-working dogs must be on leash within bighorn sheep production and winter concentration areas from December 1 to May 1 (minor changes to these dates may be made in coordination with CPW).	No similar action.	Domestic non-working dogs must be on leash within Wilderness Zone 1 (see Wilderness section (row 263) and Map 2–10p). In all other areas within bighorn sheep range, domestic non-working dogs must be on leash or under voice control. Coordinate with CPW on additional area requirements as issues are identified between domestic non-working dogs and desert bighorn sheep.
133	No similar action in existing RMPs.	Prohibit use of domestic pack goats within the D-E NCA	Require domestic pack goats to be contained (e.g., on a pack string or picket if in camp) at all times.	No similar action.	<i>Same as Alternative B:</i>  Prohibit use of domestic pack goats within the D-E NCA
134	No similar action in existing RMPs.	Reduce (close) miles of motorized and mechanized routes through desert bighorn crucial breeding habitat (production and summer concentration areas, as defined by CPW).	Reduce (close and rehab) miles of motorized and mechanized routes through desert bighorn crucial breeding habitat (production and summer concentration areas, as defined by CPW).	Same as Alternative B.	Reduce (close and rehab) miles of motorized and mechanized routes through desert bighorn crucial breeding habitat (production areas, as defined by CPW).
135	No similar action in existing RMPs.	Close BLM routes within desert bighorn sheep winter concentration areas to motorized and mechanized travel (does not apply to administrative access and county-maintained roads).	Close and rehab BLM routes within desert bighorn sheep winter concentration areas to motorized and mechanized travel (does not apply to administrative access and county-maintained roads).	No similar action.	Close and rehab BLM routes within desert bighorn sheep winter concentration areas to motorized and mechanized travel (does not apply to administrative access and county-maintained roads).

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
136	No similar action in existing RMPs.	Prohibit construction of new motorized or mechanized routes through desert bighorn crucial breeding habitat (production and summer concentration areas, as defined by CPW, Map 3–11).		No similar action.	Prohibit the construction of new motorized or mechanized routes in desert bighorn sheep production areas (see Map 3–11). See Ninemile Hill ERMA (row 388) for area-specific restrictions that apply to new foot and horse routes.
137	From December 1 to May 1, apply the following restrictions within 30,980 acres of bighorn sheep range within the D-E NCA: <ul style="list-style-type: none"> <li>• No new construction activities will occur</li> <li>• All activities will be conducted during daylight hours only</li> <li>• Vehicular access on a daily basis will be limited to a single trip</li> </ul> (BLM 1987)	Prohibit surface-disturbing activities (see Appendix B, Maps 2-1b and 2-1c) in mapped desert bighorn sheep production areas from February 1 to May 1.		No similar action.	Prohibit surface-disturbing activities (see Appendix B, Map 2–1p ) in mapped desert bighorn sheep production areas from February 1 to May 1.
138	No similar action in existing RMPs.	No similar action.	Apply SSR restrictions (see Appendix B, Map 2-2c) to surface-disturbing activities within bighorn sheep summer range.	No similar action.	Apply SSR restrictions (see Appendix B, Map 2–2p) to surface-disturbing activities within bighorn sheep summer range.
139	<b>Colorado hookless cactus</b>				
140	<b>Goal:</b> Conserve, protect and promote recovery within the D-E NCA of the Colorado hookless cactus.				

June 2016

Chapter 2 Alternatives  
Alternatives Matrix

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
141	<b>Objective:</b> No similar objective in existing RMPs	<b>Objective:</b> Manage Colorado hookless cactus habitat in order to meet public land health standards and maintain or improve the condition of the following measure of health: <ul style="list-style-type: none"> <li>Percentage of sites occupied by Colorado hookless cactus that have low levels of invasive weeds (10% or less relative cover)</li> </ul>	<b>Objective:</b> Improve BLM management of Colorado hookless cactus habitat in order to meet public land health standards and move toward the following management target: <ul style="list-style-type: none"> <li>95% (or more) of sites occupied by Colorado hookless cactus have low levels of invasive weeds (10% or less relative cover)</li> </ul>	<b>Objective:</b> Manage Colorado hookless cactus habitat in order to meet public land health standards and maintain the condition of the following measure of health: <ul style="list-style-type: none"> <li>80% (or more) of sites occupied by Colorado hookless cactus have low levels of invasive weeds (10% or less relative cover)</li> </ul>	<i>Same as Alternative D:</i>  <b>Objective:</b> Manage Colorado hookless cactus habitat in order to meet public land health standards and maintain the condition of the following measure of health: <ul style="list-style-type: none"> <li>80% (or more) of sites occupied by Colorado hookless cactus have low levels of invasive weeds (10% or less relative cover)</li> </ul>
142	No similar action in existing RMPs.	Reduce noxious and/or invasive weed spread in occupied Colorado hookless cactus habitat by restricting permitted activities in occupied habitat (grazing, recreation, road and trail construction).	Reduce noxious and/or invasive weed spread in occupied Colorado hookless cactus habitat by spot treating weeds, and by intensively managing permitted activities in occupied habitat (grazing, recreation, road and trail construction). Exlosures may be used if needed.		
143	<b>Objective:</b> No similar objective in existing RMPs	<b>Objective:</b> Manage the Colorado hookless cactus in order to meet public land health standards and improve the condition of the following measures of hookless cactus health: <ul style="list-style-type: none"> <li>Percentage of populations with evidence of recruitment</li> <li>Population trend (20-year trend) in number of individual hookless cactus in known populations</li> </ul>	<b>Objective:</b> Improve BLM management of the Colorado hookless cactus in order to meet public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>All populations of hookless cactus show evidence of recruitment</li> <li>Increasing population trend (20-year trend) in number of individual hookless cactus in known populations</li> </ul>	<b>Objective:</b> Improve BLM management of the Colorado hookless cactus in order to meet public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>80% (or more) of populations of hookless cactus show evidence of recruitment</li> <li>Static or increasing population trend (20-year trend) in number of</li> </ul>	<i>Same as Alternative D:</i>  <b>Objective:</b> Improve BLM management of the Colorado hookless cactus in order to meet public land health standards and move toward the following management targets: <ul style="list-style-type: none"> <li>80% (or more) of populations of hookless cactus show evidence of recruitment</li> <li>Static or increasing population trend (20-year trend) in</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				<i>individual hookless cactus in known populations</i>	<i>number of individual hookless cactus in known populations</i>
144	Implement the mitigation measures for livestock grazing outlined in the programmatic consultation between USFWS and the BLM.	Exclude or minimize grazing, trail development, and other permitted activities in habitat supporting excellent and good—defined by Colorado Natural Heritage Program (CNHP)—occurrences of the Colorado hookless cactus.		Minimize impacts from livestock grazing, trail development and other permitted activities in habitat supporting excellent and good (defined by CNHP) occurrences of the Colorado hookless cactus.	<i>Same as Alternative D:</i>  Minimize impacts from livestock grazing, trail development and other permitted activities in habitat supporting excellent and good (defined by CNHP) occurrences of the Colorado hookless cactus.
145	No similar action in existing RMPs.	Reduce as much as practicable, the density (miles/square mile) of routes within 200 m of known Colorado hookless cactus occurrences throughout the D-E NCA.	Reduce as much as practicable, the density (miles/square mile) of routes within 200 m of known Colorado hookless cactus occurrences throughout the D-E NCA. See ACEC section (row 565 of this matrix) for area-specific restrictions related to routes and Colorado hookless cactus.	See row 154 for comparable NCA-wide restriction for listed species, and the ACEC section (row 565) for area-specific restrictions related to routes and Colorado hookless cactus.	During travel management planning, reduce as much as practicable the density (miles/square mile) of routes within 200 m of known Colorado hookless cactus occurrences throughout the D-E NCA. If occurrences are identified in the future that conflict with route designations, consider reroutes. See ACEC section (row 565 of this matrix) for area-specific restrictions related to routes and Colorado hookless cactus.
146	No similar action in existing RMPs.	Prohibit surface-disturbing activities (see Appendix B, Map 2-1b) that pose adverse impacts to hookless cactus occurrences.	See row 154 for comparable NCA-wide restrictions for listed species, and the ACEC section (row 565) for area-specific restrictions to protect hookless cactus within proposed ACECs.		

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
147	No similar action in existing RMPs.  The current grazing permit terms and conditions limit the Escalante Creek pasture to trailing only (Map 2-4a).	Close Upper Escalante Canyon to livestock use (Map 2-4b).	Same as Alternative A (Map 2-4c).	No similar action.	To protect BLM State Director's sensitive plant species, limit livestock use in Escalante Canyon to active movement between grazing areas (See Livestock Grazing section (row 503) for more detail, Map 2-4p).
148	<b><i>All Other Special Status Species and Communities</i></b>				
149	<b>Goal:</b> Manage special status species and their habitats to provide for their conservation and restoration as part of an ecologically healthy system, and support the goals contained in Standard 4 of the Colorado Standards for Public Land Health (BLM 1997 and Appendix D).				
150	<b>Objective:</b> Maintain, restore, and enhance special status fish, wildlife and rare plant populations and associated habitats.	<b>Objective:</b> Maintain special status fish, wildlife and rare plant populations/communities and associated habitats by emphasizing natural processes, restricting allowable uses and by minimizing human manipulation of systems and processes.	<b>Objective:</b> Maintain, restore, and enhance special status fish, wildlife and rare plant populations/communities and associated habitats by applying mitigation measures on allowable uses and by prohibiting or limiting activities that would be detrimental to subpopulations, populations or habitats.	<b>Objective:</b> Maintain, restore, and enhance special status fish, wildlife and rare plant populations/communities and associated habitats by applying mitigation measures on allowable uses.	<b>Objective:</b> Maintain, restore, and enhance special status fish, wildlife and plant populations/communities and associated habitats by applying mitigation measures on allowable uses and by prohibiting or limiting activities that would be detrimental to subpopulations, populations or habitats.
151	No similar action in existing RMPs.	Prohibit surface-disturbing activities (see Appendix B, Map 2-1b) in the following vegetation communities: <ul style="list-style-type: none"> <li>• Exemplary (defined by CNHP)</li> <li>• Ancient</li> <li>• Critically imperiled (defined by CNHP)</li> <li>• Imperiled (defined by CNHP)</li> </ul>	Apply SSR restrictions (see Appendix B, Map 2-2c) in the following vegetation communities: <ul style="list-style-type: none"> <li>• Exemplary (defined by CNHP)</li> <li>• Ancient</li> <li>• Critically imperiled (defined by CNHP)</li> <li>• Imperiled (defined by CNHP)</li> </ul>	Apply SSR restrictions (see Appendix B, Map 2-2d) in the following vegetation communities: <ul style="list-style-type: none"> <li>• Exemplary (defined by CNHP)</li> <li>• Ancient</li> <li>• Critically imperiled (defined by CNHP)</li> <li>• Imperiled (defined by CNHP)</li> </ul>	Apply SSR restrictions (see Appendix B, Map 2-2p) in the following vegetation communities: <ul style="list-style-type: none"> <li>• Exemplary (defined by CNHP)</li> <li>• Ancient</li> <li>• Critically imperiled (defined by CNHP)</li> <li>• Imperiled (defined by CNHP)</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
		<ul style="list-style-type: none"> <li>• Vulnerable (defined by CNHP)</li> </ul>	<ul style="list-style-type: none"> <li>• Vulnerable (defined by CNHP)</li> </ul>		<ul style="list-style-type: none"> <li>• Vulnerable (defined by CNHP)</li> </ul>
152	<p>Promote BLM sensitive plant conservation and reduce the likelihood and need for species to be listed pursuant to the Endangered Species Act (ESA) (BLM 2008d).</p> <p>Actively manage habitat locations to improve the habitat for unique, sensitive, and endangered plants and animals. In the remainder of the resource area, improve habitat of these species where opportunities exist through development of other resources (BLM 1987).</p>	<p>Apply SSR restrictions within 100 meters (328 feet) of known occurrences of BLM sensitive plant species (see Appendix B, Maps 2-2b and 2-2c).</p> <p>Prohibit any action that poses adverse impacts to any BLM sensitive species element occurrence or subpopulation. Also prohibit any activity that would detrimentally alter connectivity between subpopulations.</p>		<p>Same as Alternative A. See ACEC section on row 565 of this matrix for additional restrictions for protection of BLM sensitive species.</p>	<p>Apply SSR restrictions within 100 meters (328 feet) of known occurrences of BLM sensitive plant species. See ACEC section (row 565) for additional restrictions for protection of BLM sensitive species (See Appendix B and Map 2-2p).</p> <p>Prohibit actions that pose adverse impacts to BLM sensitive species subpopulations or connectivity between subpopulations to a degree that is expected to decrease the viability of the subpopulation or population.</p>
153	See ACEC section (row 565) for additional restrictions for protection of BLM sensitive species.	No similar action.	See ACEC section (row 565) for additional restrictions for protection of BLM sensitive species.		
154	No similar action in existing RMPs.	Apply SSR restrictions (see Appendix B, Maps 2-2b and 2-2c) within 200 meters (656 feet) of known occurrences of federally listed and candidate plant species; and apply SSR in occupied habitat of federally listed and candidate animal species (exception: where more restrictive restrictions apply for Colorado hookless cactus or ACECs; see row 565 of this matrix).		Apply SSR restrictions (see Appendix B, Map 2-2d) within 200 meters (656 feet) of known occurrences of federally listed plant species and occupied habitat of federally listed animal species. (exception: where more restrictive restrictions apply for Colorado hookless cactus or ACECs; see Lines 145 and 565).	Apply SSR restrictions (see Appendix B, Map 2-2p and within 200 meters (656 feet) of known occurrences of federally listed and candidate plant species; and apply SSR in occupied habitat or designated critical habitat of federally listed and candidate animal species (exception: where more restrictive restrictions apply for Colorado hookless

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					cactus or ACECs; see row 565 of this matrix).
155	Special Status raptors: Prohibit disruptive and surface-disturbing activities during the period from nest territory establishment to dispersal of young from nest (see Appendix E, Raptor Species Breeding Periods) within 0.50 miles of active special status raptor nest sites (see Appendix B, Maps 2-3a, 2-3b, 2-3c, 2-3d, and 2-3p).				
156	Other raptors (except American kestrel): Prohibit surface-disturbing activities from nest territory establishment to dispersal of young from nest (see Appendix E, Raptor Species Breeding Periods) within 0.25 miles of active raptor nest sites during the period (see Appendix B, Maps 2-3a, 2-3b, 2-3c, 2-3d, and 2-3p).				
157	No similar action in existing RMPs.	<p>Year-round, apply SSR (see Appendix B, Map 2-2b) within the following areas:</p> <p>Special Status Raptors: within 0.25 mile of active special status raptor nest sites and associated alternate nests.</p>	<p>Year-round, apply SSR (see Appendix B, Map 2-2c) within the following areas:</p> <p>Bald Eagle: within 0.25 mile of active and inactive nest sites or within 100 meters of abandoned nests (i.e., unoccupied for 5 consecutive years but with all or part of the nest remaining);</p> <p>Golden Eagle: within 0.25 mile of active and inactive nest sites;</p> <p>Ferruginous Hawk, Peregrine Falcon, Prairie Falcon, and Northern Goshawk: within 0.50 mile of active and inactive nest sites;</p> <p>Other Special Status Raptors (except Mexican spotted owl): within 0.25 mile of active and inactive nest sites.</p>	Same as Alternative B (Map 2-2d)	<p>Year-round, apply SSR (see Appendix B, Map 2-2p) within the following areas:</p> <p>Bald Eagle: within 0.25 mile of active and inactive nest sites or within 100 meters of abandoned nests (i.e., unoccupied for 5 consecutive years but with all or part of the nest remaining);</p> <p>Golden Eagle: within 0.25 mile of active and inactive nest sites;</p> <p>Ferruginous Hawk, Peregrine Falcon, Prairie Falcon, and Northern Goshawk: within 0.50 mile of active and inactive nest sites;</p> <p>Other Special Status Raptors (except Mexican spotted owl): within 0.25 mile of active and inactive nest sites.</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
158	No similar action in existing RMPs.	Apply SSR (see Appendix B, Map 2-2b) within 200 meters (656 feet) of active nest sites and associated alternate nests of Other raptors (except kestrel)	Apply SSR (see Appendix B, Map 2-2c) within 100 meters (328 feet) of active nest sites and associated alternate nests of Other raptors (except American kestrel, red-tailed hawk, and great-horned owl).	No similar action.	Apply SSR (see Appendix B, Map 2-2p) within 100 meters (328 feet) of active nest sites and associated alternate nests of Other raptors (except American kestrel, red-tailed hawk, and great-horned owl).
159	<p>Protect bald eagle concentration and falcon nest buffer areas by prohibiting activities during certain times of the year (BLM 1987).</p> <p>To protect bald eagles from activities that would cause abandonment of winter concentration areas, all development activities (exploration, drilling, etc.) will only be allowed in these areas from May 1 through November 30. Exceptions to this limitation may be authorized in writing by the BLM's Authorized Officer (BLM 1989a).</p>	Prohibit disruptive and surface-disturbing activities from December 1 to April 30 within bald eagle winter concentration areas (see Appendix B, Maps 2-3b and 2-3c).		No similar action.	Prohibit disruptive and surface-disturbing activities from December 1 to April 30 within bald eagle winter concentration areas (see Appendix B, Map 2-3p and
160	If Mexican Spotted Owls or any other federally listed species are newly discovered within the D-E NCA, adopt measures consistent with current recovery plans.				<p>If Mexican Spotted Owls or any other federally listed species are newly discovered within the D-E NCA, adopt measures consistent with current recovery plans.</p> <p>For existing federally listed species found within D-E NCA, adopt measures consistent with current recovery plans.</p>



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
161	No similar action in existing RMPs.	Prohibit surface-disturbing activities from February 15 to August 30 within 0.25 miles of active kit fox dens (see Appendix B) (Wilson and Ruff 1999).	Prohibit surface-disturbing and disruptive activities from February 15 to August 30 within 0.25 miles of active kit fox dens (see Appendix B).  Apply SSR restrictions within 200 meters (656 feet) of active kit fox dens year-round (see Appendix B, Map 2-2c).	Same as Alternative B	Prohibit surface-disturbing and disruptive activities from February 15 to August 30 within 0.25 miles of active kit fox dens (see Appendix B).  Apply SSR restrictions within 200 meters (656 feet) of active kit fox dens year-round (see Appendix B, Map 2-2p).
162	No similar action in existing RMPs.	Apply SSR within 0.25 miles of federally listed, BLM sensitive, and Colorado State Species of Concern bat maternity roost sites and winter hibernacula, including all entrances to cave/mine network (see Appendix B).		Apply SSR restrictions within 0.25 miles of federally listed and BLM sensitive bat species' maternity roost sites and winter hibernacula, including all entrances to cave/mine network) (see Appendix B).	Apply SSR within 0.25 miles of federally listed, BLM sensitive, and Colorado State Species of Concern bat maternity roost sites and winter hibernacula, including all entrances to cave/mine network (see Appendix B).
163	No similar action in existing RMPs.	No similar action.	Prohibit surface-disturbing and disruptive activities from April 1 through August 31 within 50 meters (164 feet) of all entrances to cave/mine network associated with special status bat species' maternity roost sites (see Appendix B). Prohibit surface-disturbing and disruptive activities from October 15 to April 15 within 50 meters (164 feet) of all entrances to cave/mine networks associated with special status species winter hibernacula (see Appendix B).	No similar action.	Prohibit surface-disturbing and disruptive activities from April 1 through August 31 within 50 meters (164 feet) of all entrances to cave/mine network associated with special status bat species' maternity roost sites (see Appendix B). Prohibit surface-disturbing and disruptive activities from October 15 to April 15 within 50 meters (164 feet) of all entrances to cave/mine networks associated with special status species winter hibernacula (see Appendix B).
164	No similar action in existing RMPs.	Where bat roosting, maternity sites and winter hibernacula occur, bat gates would be required for closing abandoned mine lands.			

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
165	No similar action in existing RMPs.	Apply SSR restrictions (see Appendix B) within 200 meters (656 feet) of identified BLM sensitive reptile hibernacula.		No similar action.	Apply SSR restrictions (see Appendix B) within 200 meters (656 feet) of identified BLM sensitive reptile hibernacula.
166	No similar action in existing RMPs.	In coordination with CPW, maintain healthy white-tailed prairie dog populations in the D-E NCA as part of healthy salt desert shrub/saltbush vegetation communities.			
167	No similar action in existing RMPs.	Prohibit surface-disturbing or disruptive activities within 50 meters (164 feet) of the edge of active (occupied within the last 10 years) white-tailed prairie dog towns (see Appendix B, Maps 2-1b and 2-1c).		Prohibit disruptive activities within presently occupied white-tailed prairie dog towns (see Appendix B). Seek to relocate surface-disturbing activities outside of or toward the edge of all active (occupied within the last 10 years) prairie dog towns.	Prohibit surface-disturbing or disruptive activities from March 1 to June 15 within 50 meters (164 feet) of the edge of active (occupied within the last 10 years) white-tailed prairie dog towns (see Appendix B, Map 2-3p).
168	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Advance the conservation of Gunnison sage-grouse and its habitat in accordance with national, State, and local working group recommendations and policy.			
169	No similar action in existing RMPs.	Prohibit surface-disturbing and disruptive activities from December 15 to March 15 within occupied winter habitat for Gunnison sage-grouse (see Appendix B, Map 2-3b).	Prohibit surface-disturbing activities from December 15 to March 15 within occupied winter habitat for Gunnison sage-grouse (see Appendix B, Map 2-3c).		Prohibit surface-disturbing activities from December 15 to March 15 within occupied winter <b>critical</b> habitat for Gunnison sage-grouse (see Appendix B, Map 2-3p). If other <b>winter</b> habitats are determined to be occupied, implement conservation measures consistent with the <b>current final rule for the species (USFWS 2014b)</b> . Use most up-to-date plan for guidance.
170	<b>Non-Special Status Fish and Wildlife</b>				
171	<b>Goal:</b> Promote and conserve native species by managing aquatic and terrestrial habitats to emphasize ecosystem diversity, productivity, viability, and natural processes.				
172	<b>Objective:</b> Maintain integrity and extent of migratory bird nesting habitat throughout the D-E NCA in conformance with the Migratory Bird Treaty Act.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
173	Protect lands that are high priority habitat for migratory bird species of high Federal interest.	Protect breeding habitats of migratory birds by managing for priority vegetation type objectives (see specific actions and allowable uses under each habitat type in starting on row 22 of this matrix).			
174	No similar action in existing RMPs.	Prohibit surface-disturbing or disruptive activities during the migratory bird nesting season from May 15 to July 31 (see Appendix B).	Prohibit surface-disturbing or disruptive activities during the migratory bird nesting season from May 15 to July 15 (see Appendix B).	Prohibit surface-disturbing or disruptive activities during the migratory bird nesting season from May 15 to July 15 (see Appendix B). Modify dates as needed, based upon updated CPW and USFWS recommendations.	
175	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Minimize the spread of non-native, invasive fish and wildlife species in the D-E NCA	<b>Objective:</b> Actively manage to eliminate non-native, invasive fish and wildlife species from the D-E NCA	<b>Objective:</b> Actively manage to reduce non-native invasive fish and wildlife species in the D-E NCA	<b>Objective:</b> Work cooperatively with CPW and USFWS to actively manage to eliminate non-native, invasive fish and wildlife
176	Reduce risk of introduction and expansion of invasive fish and wildlife in the D-E NCA through appropriate measures in coordination with CPW and other appropriate entities.		Eradicate non-native and invasive fish and wildlife species in the D-E NCA in coordination with CPW and other appropriate entities.	Same as Alternatives A and B.	Reduce risk of introduction and expansion, and work to eradicate invasive fish and wildlife in the D-E NCA through appropriate measures in coordination with CPW and other appropriate entities (e.g., removal of non-native rainbow trout and restocking with native cutthroat trout).
177	No similar action in existing RMPs.	Use early detection/rapid response to prevent the spread of non-native aquatic competitors (e.g., bull frogs) in coordination with CPW and other appropriate entities.	Remove non-native aquatic competitors (e.g., bull frogs) from active native aquatic breeding grounds in coordination with CPW and other appropriate entities.		
178	<b>Objective:</b> Provide sufficient forage, cover, and protection from disturbance for large ungulates (deer, elk, bighorn sheep, pronghorn antelope) to maintain healthy viable populations across the landscape commensurate with the BLM Colorado’s Standards for Public Land Health.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
179	<p>Protect the habitat of deer, and elk by prohibiting disturbing activities as follows (BLM 1987):</p> <ul style="list-style-type: none"> <li>• Bighorn Sheep Range: December 1 to May 1</li> <li>• Deer and/or elk critical winter range: December 1 to May 1</li> <li>• Deer and elk migration areas: December 1 to May 1</li> <li>• Elk calving areas: May 15 to June 15</li> </ul>	<p>Prohibit disruptive activities in mapped big game crucial winter range (including severe winter range and winter concentration areas) as follows:</p> <ul style="list-style-type: none"> <li>• Pronghorn antelope: December 1 to April 30 (Map 3–15)</li> <li>• Mule deer: December 1 to April 30 (Map 3–16)</li> <li>• Elk: December 1 to April 30 (Map 3–17)</li> <li>• Desert bighorn sheep: November 1 to April 30 (Map 3–11)</li> </ul> <p>See Appendix B</p>			
180	No similar action in existing RMPs.	Close BLM routes from December 1 to April 30 within mule deer and elk winter concentration areas to public motorized and mechanized vehicles (as mapped by CPW, Maps 3–16 and 3–17).	<p>If big game herds are determined by CPW to be highly stressed during crucial winter periods, reduce human induced stressors by seasonally closing BLM routes to public motorized and mechanized use within big game crucial winter range (severe winter range and winter concentration areas) during the following time periods:</p> <ul style="list-style-type: none"> <li>• Pronghorn antelope: December 1 to March 31 (Map 3–15)</li> <li>• Mule deer: December 1 to March 31 (Map 3–16)</li> <li>• Elk: December 1 to April 30 (Map 3–17)</li> </ul>	<p>If big game herds are determined by CPW to be highly stressed during crucial winter periods, reduce human-induced stressors by seasonally closing BLM routes in areas of concern to public motorized and mechanized use within big game crucial winter range (severe winter range and winter concentration areas) during the following time periods:</p> <ul style="list-style-type: none"> <li>• Pronghorn antelope: December 1 to March 31 (Map 3–15)</li> <li>• Elk severe winter range: December 1 to April 30 (Map 3–17)</li> </ul>	

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				<ul style="list-style-type: none"><li>Desert bighorn sheep: November 1 to April 30 (Map 3–11)</li></ul>	<ul style="list-style-type: none"><li>Desert bighorn sheep: November 1 to April 30 (Map 3–11)</li><li>Mule deer severe winter range (December 1 to April 30)</li></ul>
181	No similar action in existing RMPs.	Close BLM routes within pronghorn winter concentration areas to motorized and mechanized travel (does not include administrative access and county-maintained roads).	Close and rehab BLM routes within pronghorn winter concentration areas to motorized and mechanized travel (does not include administrative access and county-maintained roads).	No similar action.	Close and rehab BLM routes within pronghorn winter concentration areas to motorized and mechanized travel where necessary (does not include administrative access and county-maintained roads).
182	No similar action in existing RMPs.	Within pronghorn range, prohibit the construction of new fences to accommodate passage by pronghorn.	Within pronghorn range, minimize the number of fences that present barriers to pronghorn. Construct new fences to accommodate passage by pronghorn, and replace existing fences that do not accommodate pronghorn passage.		
183	<b>Objective:</b> Manage to prevent the introduction and spread of wildlife diseases into the D-E NCA (for information on bighorn sheep disease issues, see section 3.2.2.2, Special Status Species and Natural Communities, of this RMP)				
184	No similar action in existing RMPs.	To prevent the spread of whirling disease and non-native aquatic organisms: require disinfection prior to construction/launch of all equipment previously used in water bodies with known invasive species. Emergency equipment would be exempt.		To prevent the spread of whirling disease and non-native aquatic organisms: require permitted boat operators to disinfect all equipment previously used in water bodies with known invasive species prior to construction/launch. Emergency equipment would be exempt.	Coordinate with the State of Colorado to prevent the spread of whirling disease and non-native aquatic organisms.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
185	No similar action in existing RMPs.	In the event of a bat disease outbreak such as White Nose Syndrome, close to public access (except for scientific research) any caves and other structures utilized by bats.		No similar action.	In the event of a bat disease outbreak, such as White Nose Syndrome, close public access (except for scientific research) to any caves and other structures utilized by bats.  When the BLM adopts an adaptive management strategy for the disease outbreak, that strategy will be adopted as well for the D-E NCA, This includes early detection rapid response (EDRR) strategy.
186	Any introduction or augmentation of fish or wildlife populations must come from healthy population sources.				
187	Noxious and Invasive Weeds				
188	Goal: Through integrated pest management, control, suppress and eradicate, where possible, noxious and invasive species to support healthy native plant communities across the planning area.				Goal: Through integrated pest management, prevent, control, suppress and eradicate, where possible, noxious and invasive species to support healthy native plant communities across the planning area.
189	Objective: Manage lands under integrated pest management strategies.	Objective: Manage lands in the planning area under integrated pest management strategies with an emphasis on use of natural processes and/or restrictions on allowable uses.	Objective: Manage lands in the planning area under integrated pest management strategies to support biological and cultural resource objectives.	Objective: Manage lands in the planning area under integrated pest management strategies to support biological, cultural and recreation objectives.	
190	Ensure noxious and invasive weed preventive measures are applied to special recreation permit activities, construction activities, road maintenance and mechanical vegetation treatment activities as outlined in contracts, permits, and cooperative agreements.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
191	In coordination with the counties, use early detection/rapid response to contain and (where possible) eradicate State A-listed species and selected BLM species of concern (see Appendix F for list of State weeds).		In coordination with the counties, use early detection/rapid response to contain and (where possible) eradicate all State listed species and selected BLM species of concern (see Appendix F for list of State weeds).	In coordination with the counties, use early detection/rapid response to contain and (where possible) eradicate State A- and B-listed species and selected BLM species of concern (see Appendix F for list of State weeds).	In coordination with the counties, use early detection/rapid response to contain and (where possible) eradicate all State listed species and selected BLM species of concern (see Appendix F for list of State weeds).
192	Focus weed inventory surveys and treatments on high use areas (roads, trails, ponds, river, etc.), federally listed species habitat, and in stream segments suitable for inclusion in the National Wild and Scenic Rivers System.				
193	No similar action in existing RMPs.	Increase community and partner involvement in the application of integrated pest management, including development of weed plans, coordinated efforts across boundaries, and efficient use of resources.			
194	No similar action in existing RMPs.	Encourage the counties to use construction materials for road maintenance that come from quarries that are free of all State listed species and selected BLM species of concern.	Where feasible, require the use of road maintenance or construction materials that come from quarries that are free of all State listed species and selected BLM species of concern.		
195	Fire and Fuels				
196	Goal: Manage fire to maximize ecological health benefits and provide first for firefighter and public safety.				
197	Objective: Minimize cost and loss, complement resource management objectives, and sustain the productivity of the biological ecosystems through fire management (BLM 1987).	Objective: Use a full range of wildfire management actions when responding to unplanned ignitions, from full suppression to managing for multiple objectives including, but not limited to, resource benefit.			

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
198	Allow natural unplanned ignitions to be managed for multiple objectives (including resource benefit) within 167,772 acres of the D-E NCA. (BLM 2008b; BLM and National Park Service 2012, Map 2–6a).	Allow natural unplanned ignitions to be managed for multiple objectives (including resource benefit) within 208,568 acres of the D-E NCA. This excludes 1,423 acres within the following areas (Map 2–6b): <ul style="list-style-type: none"><li>• Gunnison River riparian corridor</li></ul>	Allow natural unplanned ignitions to be managed for multiple objectives (including resource benefit) within 181,308 acres of the D-E NCA. This excludes 28,680 acres within the following areas (Map 2–6c): <ul style="list-style-type: none"><li>• Gunnison River riparian corridor</li><li>• Escalante Canyon</li><li>• the Hunting Ground</li></ul>	Allow natural unplanned ignitions to be managed for multiple objectives (including resource benefit) within 166,557 acres of the D-E NCA. This excludes 43,430 acres within the following areas (Map 2–6d): <ul style="list-style-type: none"><li>• Gunnison River riparian corridor</li><li>• Escalante Canyon</li><li>• the Hunting Ground</li><li>• Sawmill Mesa SRMA</li></ul>	Allow natural unplanned ignitions to be managed for multiple objectives (including resource benefit) within 208,568 acres of the D-E NCA to meet biological resource objectives. This excludes 1,427 acres within the following areas (Map 2–6p): <ul style="list-style-type: none"><li>• Gunnison River riparian corridor</li></ul>
199	<b>Objective:</b> Restore areas of FRCCs 2 and 3 toward FRCC 1. Maintain areas of FRCC 1 (Map 3–22).				
200	No similar action in existing RMPs.	Do not use vegetation treatments to improve FRCC or to meet biological and cultural resource objectives.	Use mechanical, chemical and biological treatments and prescribed fire to improve FRCC and to meet biological and cultural resource objectives.		
201	<b>Objective:</b> Manage fire and fuel activities to prevent and lessen negative impacts to the following values that include, but are not limited to, human life, private property/improvements, power lines, communication sites, recreation sites, special status species habitat, cultural resources, watershed and other high value natural resources.				
202	No similar action in existing RMPs.	Manipulate fire and fuels to the minimal extent necessary to protect private property and infrastructure.	Manage fire and fuels to protect private property, infrastructure, cultural and biological resources, and watersheds.		
203	Implement emergency stabilization and rehabilitation as needed to meet resource objectives.	Implement emergency stabilization only as needed to prevent significant and lasting resource degradation, as well as to prevent threats to public health and safety.	Implement emergency stabilization and rehabilitation as needed to meet biological and cultural resource objectives.	Implement emergency stabilization and rehabilitation as needed to meet biological, recreation and cultural resource objectives.	
204	<b>Soils and Water Quality</b>				
205	<b>Goal:</b> Ensure soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes (Colorado Public Land Health Standard 1, Appendix D).				



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
206	<b>Objective:</b> Reduce soil erosion and sediment yield, costs associated with unsuccessful land/vegetation treatment projects on unsuitable soils, hazards to life or property from soil failure due to the use of unsuitable soils; to maintain long-term soil productivity; and to provide for the safe and proper use of soils (BLM 1987).	<b>Objective:</b> Minimize or control elevated levels of salt, sediment, and selenium contribution from Federal lands to stream systems in the planning area.			
207		<b>Objective:</b> Maintain or improve soil productivity, including retention of topsoil quality and reestablishing soil capability, potential, and functionality when disturbed.			
208		<b>Objective:</b> Preserve proper function and condition of upland soils (maintain or improve the number of acres meeting Colorado Public Land Health Standard 1 (BLM 1997 and Appendix D).			
209	Ensure surface disturbances do not cause accelerated erosion (e.g., rills, soil pedestals, actively eroding gullies) on a watershed scale (e.g., 4th field watershed).				
210	All new facilities would be designed to meet BLM standards	Require professional geotechnical engineering and reclamation plans for surface-disturbing projects in areas having soils with severe or very severe erosion hazard. Proponents must commit to the following in these areas: <ul style="list-style-type: none"><li>● Restore site productivity</li><li>● Adequately control surface runoff</li><li>● Protect off-site areas from accelerated erosion such as rilling, gullying, piping, and mass wasting</li><li>● Avoid surface-disturbing activities during periods when soil is saturated or frozen</li></ul>		No similar action.	All new facilities would be designed to meet BLM standards.
211	No similar action in existing RMPs.	Avoid disturbance to biologic soil crusts that are determined to be key in sustaining proper function and condition of upland soil health.	Avoid and/or mitigate disturbance to biologic soil crusts that are determined to be key in sustaining proper function and condition of upland soil health.	No similar action.	Avoid and/or mitigate disturbance to biologic soil crusts that are determined to be key in sustaining proper function and condition of upland soil health.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
212	Treat or limit the use of soils in Cactus Park (1,000 acres): Limit access to the area, implement land treatment measures (including gully plugs, reseeding, diversion and water-retention structures) (BLM 1987).	Prohibit surface-disturbing activities within a minimum of 25 meters (82 feet) of “fragile soils” (distance may be extended on the basis of site-specific conditions) (see Appendix B, Maps 2-1b and 2-1c). On-site evaluation of site-specific soil characteristics would be conducted by the BLM verifying that the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil mapping unit descriptions are appropriate to the site.		No similar action.	Apply SSR within a minimum of 25 meters (82 feet) of “fragile soils” (distance may be extended on the basis of site-specific conditions) (see Appendix B, Map 2-2p). On-site evaluation of site-specific soil characteristics would be conducted by the BLM verifying that NRCS soil mapping unit descriptions are appropriate to the site.
213	Analyze proposed surface-disturbing projects to determine suitability of soils to support such projects (BLM 1987).	Prohibit surface-disturbing activities on slopes greater than or equal to 40 percent to maintain site stability (see Appendix B, Maps 2-1b, 2-1c, 2-1d, and 2-1p). Apply SSR in areas with natural slopes in the range of 25 to 40 percent (see Appendix B, Maps 2-2b, 2-2c, 2-2d, and 2-2p).			
214	<b>Goal:</b> Protect, conserve, and/or enhance “natural” watershed functions in the capture, retention, and release of water in quantity, quality, and time to meet the purposes outlined in the legislation.				
215	<b>Goal:</b> Protect, conserve, and/or enhance the geomorphic balance of area streams (e.g., stream channel width/depth, sinuosity, slope, and substrate are appropriate for the given landscape setting and geology) with the water and sediment being supplied by watersheds within the planning area.				
216	<b>Objective:</b> Maintain or improve existing water quality in the resource area (BLM 1987).	<b>Objective:</b> Manage public land activities within the planning area in a manner that contributes to the long term improvement of surface and groundwater quality and minimizes or controls elevated levels of salts, sediment, selenium, and other potential contaminant contributions from Federal lands (or Federal actions) to water resources.			
217	No similar action in existing RMPs.	Prohibit surface-disturbing activities within a minimum distance of 50 meters (164 feet) from the edge of the ordinary high-water mark (bank-full stage) of ephemeral streams (see Appendix B, Map 2-1b).	Prohibit surface-disturbing activities within a minimum distance of 30 meters (98 feet) from the edge of the ordinary high-water mark (bank-full stage) of ephemeral streams (see Appendix B, Map 2-1c).	Apply SSR within a minimum distance of 30 meters (98 feet) from the edge of the ordinary high-water mark (bank–full stage) of ephemeral streams (see Appendix B, Map 2-2p).	
218	Monitor water quality, morphology, and channel stability of streams with concerns identified through land health assessments or inventories.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
219	<b>Objective:</b> Ensure BLM management actions do not further degrade water quality in impaired stream segments (currently segments 2 and 4a) of the Lower Gunnison River basin.	<b>Objective:</b> Promote delisting of water quality impaired stream segments (currently segment 2 of the Lower Gunnison River Basin) and maintain water quality on segments meeting State water quality standards (currently stream segments 4a, 4b, 5, or 6 of the Lower Gunnison River Basin, Map 3–25).			<b>Objective:</b> Promote delisting of water quality impaired stream segments; improve water quality limited stream segments that require TMDLs (currently segment 2 of the Lower Gunnison River Basin); and maintain water quality on segments meeting State water quality standards (currently stream segments 4a, 4b, 5, or 6 of the Lower Gunnison River Basin, Map 3–25).
220	Where willing sellers/participants exist, consider land or easement acquisitions and land exchanges that will enhance the values of the D-E NCA (Interim Management Policy 2009).	No similar action.	Pursue acquisition of land within the D-E NCA from willing sellers on properties with high potential to improve water resource conditions.		
221	No similar action in existing RMPs.	No similar action.	Maintain, replace, improve, or remove and reclaim structures within streams that are contributing to morphologic destabilization and increased sedimentation to surface waters. This would not include non-Federal diversions associated with valid existing water rights.		
222	Maintain or improve water quality in remaining public land by incorporating site-specific mitigation or improvement measures into other resource program projects that have potential to affect water quality (BLM 1987).	Prohibit surface-disturbing activities within water quality impaired stream segments (currently segment 2 of the Lower Gunnison River Basin) (see Appendix B, Map 2–1b).	Restrict development of new recreational facilities (e.g., roads, trails, parking areas, and camp grounds) in water quality impaired stream segments (currently segment 2 of the Lower Gunnison River Basin). Maintain and restore existing facilities to the greatest extent practicable without increasing disturbance footprints.	Apply SSR for all surface disturbing activities in watersheds of water quality impaired stream segments (303d-listed stream segments) and water quality limited stream segments that require TMDLs when land health conditions and/or BLM land use authorizations contribute towards impairment (see Appendix B, Map 2-2p).	

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					Reclaim other anthropogenic disturbances where monitoring shows they are contributing to water quality degradation.
223	No similar action in existing RMPs.	Within the planning area, close all nonessential routes (per travel management objectives) located in water quality impaired stream segments (currently segment 2 of the Lower Gunnison River basin).	Within the planning area, close and rehab all nonessential routes (per travel management objectives) located in water quality impaired stream segments (currently segment 2 of the Lower Gunnison River basin).	No similar action.	In watersheds of water-quality-impaired stream segments (303d-listed stream segments) and water-quality-limited stream segments that require TMDLs, close and rehabilitate all routes not necessary to meet other program objectives (in accordance with travel management objectives).
224	Treat 1,500 acres within Cactus Park to reduce sediment (BLM 1987).	Allow degraded and excessively eroding landscapes to reclaim through passive management (e.g., removal of grazing, route closures, environmental education and awareness) and natural processes.	Within the planning area, restore degraded and excessively eroding landscapes (per land health determinations) to more desirable conditions (as defined by ecologic site description).		
225	Cultural Resources				
226	Note: Regardless of alternative, ongoing consultations (between the BLM, State Historic Preservation Office (SHPO), Native American Tribes, and other parties with an interest in the cultural and archaeological resources of the D-E NCA) will drive the BLM’s management of cultural resources. Management to be influenced by consultation includes implementation of resource allocation decisions, priority-setting and the management of heritage areas. Cooperative projects between the BLM and Native American Tribes will also continue regardless of alternative. Examples include the Ute Ethnobotany and Ute Trail projects and the Ute Learning Garden.				
227	Goal: Identify, preserve, and protect significant cultural resources in order to ensure they are available for appropriate uses by present and future generations (i.e., for research, education, and preservation of cultural heritage)				
228	Objective: Review and assess extant site data for values, protection and preservation needs (BLM 1987).	Objective: Allocate cultural resources to preserve or utilize their educational, traditional, and scientific potential or discharge them from further management consideration.			

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative																					
229	<p>Consider the following when setting priorities for sites (BLM 1987):</p> <p>1. The capability of the site to yield information important to the prehistory or history of the nation, State, or local area.</p> <p>2. The fragile or eroding condition of the site. Sites with fragile or exposed features may take priority over stable sites. Examples are rock art, wickiups, eagle traps, scaffolds, and sites with eroding features.</p>	<p>Allocate all cultural resources currently recorded, or projected to occur on the basis of existing data synthesis, to Use Allocations according to their nature and relative preservation value (BLM Manual 8110.42 (BLM 2004b) and planning handbook H-1601-1 (BLM 2005); see glossary for more information regarding cultural use allocations). Cultural use allocations include:</p> <table><thead><tr><th>Use Category Allocation</th><th>Management Action</th><th>Desired Outcome</th></tr></thead><tbody><tr><td>a. Scientific use</td><td>Permit appropriate research</td><td>Preserved until research or data recovery potential is realized</td></tr><tr><td>b. Conservation for future use</td><td>Protective measures/ designation<sup>1</sup></td><td>Preserved until conditions for use are met</td></tr><tr><td>c. Traditional use</td><td>Consult with tribes, determine limitations<sup>1</sup></td><td>Long-term preservation</td></tr><tr><td>d. Public use</td><td>Determine permitted use<sup>1</sup></td><td>Long-term preservation, on-site interpretation</td></tr><tr><td>e. Experimental use</td><td>Determine nature of experiment</td><td>Protected until used</td></tr><tr><td>f. Discharge from management</td><td>Remove protective measures</td><td>No use after recordation; not preserved</td></tr></tbody></table>				Use Category Allocation	Management Action	Desired Outcome	a. Scientific use	Permit appropriate research	Preserved until research or data recovery potential is realized	b. Conservation for future use	Protective measures/ designation <sup>1</sup>	Preserved until conditions for use are met	c. Traditional use	Consult with tribes, determine limitations <sup>1</sup>	Long-term preservation	d. Public use	Determine permitted use <sup>1</sup>	Long-term preservation, on-site interpretation	e. Experimental use	Determine nature of experiment	Protected until used	f. Discharge from management	Remove protective measures	No use after recordation; not preserved
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230	<p><b>Objective:</b> Identify areas of significance for future inventory, designate high value areas for special management action based upon criteria outlined in the resource protection planning process reports and cultural resource management guide for the resource area (BLM 1987).</p>	<p><b>Objective:</b> Manage cultural resources for their allocated values.</p>																								
231	<p>Actively manage the Cactus Park Cultural Resources Management Site (1,000 acres). Protect and preserve remaining high value sites as prescribed by law and policy or as opportunities and situations arise (BLM 1987).</p>	<p>Preserve and protect eligible properties and/or landscapes to protect the integrity of setting and sense of place, and their scientific and/or traditional values.</p>	<p>Preserve the existing character of eligible cultural properties through holistic management to protect the cultural, visual, and biological landscape.</p>	<p>Preserve and protect eligible properties and/or landscapes to protect the integrity of setting and sense of place, and their scientific and/or traditional values.</p>																						

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
232	Manage potentially eligible properties (“needs data”) as eligible until evaluative testing or additional evidence determines whether the site is eligible or not eligible.				
233	<b>Objective:</b> No similar objective in existing RMPs	<b>Objective:</b> Identify and list appropriate National Register of Historic Places (NRHP) sites and districts for locations within the D-E NCA that have unique and concentrated cultural values.			
234	No similar action in existing RMPs.	Manage scientifically and publicly valuable archaeological and cultural resources through documentation and nomination to the NRHP and completion of cultural resource management plans. Annually identify areas of significance for future inventory and designate high-value areas for special management actions annually based upon criteria outlined in the resource protection planning process reports and cultural resource management guide for the resource area.			
235	No similar action in existing RMPs.	Nominate applicable individual eligible sites to the NRHP.			
236	No similar action in existing RMPs.	Nominate groups of eligible sites on the basis of NRHP multiple property submissions for the following themes: Roads, Rails, and Trails; Paleoindian and Archaic Transition; <u>rock art</u> ; Fremont; Protohistoric Camps, and shelters, caves, and alcoves.			
237		Conduct stabilization and rehabilitation of significant sites listed on the NRHP.			
238	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Promote public awareness, cultural resource education, and stewardship in the D-E NCA.			
239	Respond to basic Section 106 and Section 110 responsibilities.	<p>Respond to basic Section 106 and Section 110 responsibilities and identify measures such as the following to proactively manage, protect, and use cultural resources:</p> <ul style="list-style-type: none"> <li>• Organize and conduct educational programs for the public, school groups, vocational archaeology groups, project proponents, permittees, contractors, and others about cultural resource ethics, and encourage their help in reporting new discoveries and incidents of vandalism.</li> </ul>	<p>Respond to basic Section 106 and Section 110 responsibilities and identify measures such as the following to proactively protect, manage and preserve cultural resources:</p> <ul style="list-style-type: none"> <li>• Interpret sites (off-site)</li> <li>• Stabilize and protect sites that are becoming degraded through erosion, recreation or other impacts</li> <li>• Limit archaeological excavation in certain areas or on certain types of site to preserve some cultural resources for future technologies or concerns.</li> <li>• Prioritize interpretation of National Register Sites</li> </ul>	<p>Respond to basic Section 106 and Section 110 responsibilities and identify measures such as the following to proactively protect, manage and preserve cultural resources:</p> <ul style="list-style-type: none"> <li>• Develop heritage tourism sites using BMPs;</li> <li>• Interpret sites (on or off-site)</li> <li>• Organize and conduct ongoing educational programs for the public, school groups, vocational archaeology groups, project proponents, permittees, contractors, and others about cultural resource ethics, and encourage their help in reporting new</li> </ul>	<p>Respond to basic Section 106 and Section 110 responsibilities and identify measures such as the following to proactively protect, manage and preserve cultural resources:</p> <ul style="list-style-type: none"> <li>• Interpret sites (on or off-site)</li> <li>• Stabilize and protect sites that are becoming degraded through erosion, recreation or other impacts</li> <li>• Prioritize interpretation of National Register Sites and/or Districts (on or off-site).</li> <li>• Organize and conduct educational programs</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
			and/or Districts (on or off site). <ul style="list-style-type: none"><li>Organize and conduct educational programs for the public, school groups, vocational archaeology groups, project proponents, permittees, contractors, and others about cultural resource ethics, and encourage their help in reporting new discoveries and incidents of vandalism.</li></ul>	discoveries and incidents of vandalism.	for the public, school groups, vocational archaeology groups, project proponents, permittees, contractors, and others about cultural resource ethics, and encourage their help in reporting new discoveries and incidents of vandalism. <ul style="list-style-type: none"><li>Develop heritage tourism sites using BMPs;</li><li>Limit archaeological excavation in certain areas or on certain types of site to preserve some cultural resources for future technologies or concerns.</li></ul>
240	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Maintain and protect the integrity of setting and place of areas where natural, cultural, and historic resources combine to form a cohesive, important landscape. Respond to the tribes’ identified interest in landscape-level attention by managing these landscapes as heritage areas.			
241	No similar action in existing RMPs.	Manage 327 acres in Little Dominguez Canyon as the Rambo/Little Dominguez Canyon Heritage Area to maintain and protect the integrity of setting and place as a historic homestead location (Map 2-9p). Within this area: <ul style="list-style-type: none"><li>Restrict access for conservation purposes and protect and preserve historic structures</li><li>Make the area day use only to prevent the likelihood of destruction of structures</li></ul>	Manage 327 acres in Little Dominguez Canyon as the Rambo/Little Dominguez Canyon Heritage Area to maintain and protect the integrity of setting and place as a historic homestead location (Map 2-9p). Within this area: <ul style="list-style-type: none"><li>Focus on the education, interpretation and protection/preservation of the historic Rambo homestead.</li></ul>	Manage 327 acres in Little Dominguez Canyon as the Rambo/Little Dominguez Canyon Heritage Area to maintain and protect the integrity of setting and place as a historic homestead location (Map 2-9p). Within this area: <ul style="list-style-type: none"><li>Focus on the education, interpretation and protection/preservation of the historic Rambo homestead.</li></ul>	

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				<ul style="list-style-type: none"> <li>Prohibit camping within 100 meters of any historical buildings or structures to prevent the likelihood of destruction of structures.</li> </ul>	<ul style="list-style-type: none"> <li>Make the area day use only to prevent the likelihood of destruction of structures</li> </ul>
242	No similar action in existing RMPs.	<p>Manage 1,652 acres in Big Dominguez Canyon as the Big Dominguez Canyon Heritage Area to maintain and protect the integrity of setting and place with a focus on prehistoric rock art, trails, historic railroad area, biological heritage (Map 2-9p). Within this area:</p> <ul style="list-style-type: none"> <li>Focus on the education and interpretation (outside of the Wilderness boundaries) of the following locations and topics: Bridgeport Siding, rock art, Denver and Rio Grande Railroad, historic ranching, threatened and endangered species</li> <li>Make the Wilderness within the area day use only to reduce vandalism and theft.</li> </ul>		<p>Manage 1,652 acres in Big Dominguez Canyon as the Big Dominguez Canyon Heritage Area to maintain and protect the integrity of setting and place with a focus on prehistoric rock art, trails, historic railroad area, biological heritage (Map 2-9p). Within this area:</p> <ul style="list-style-type: none"> <li>Focus on the education and interpretation (outside of the Wilderness boundaries) of the following locations and topics: Bridgeport Siding, rock art, Denver and Rio Grande Railroad, historic and current ranching, trails (e.g., Ute trails, mining roads, paleo roads), natural resources (particularly BLM special status species found within the area)</li> <li>Prohibit camping within 100 meters of cultural sites to prevent vandalism and theft.</li> </ul>	<p>Manage 1,652 acres in Big Dominguez Canyon as the Big Dominguez Canyon Heritage Area to maintain and protect the integrity of setting and place with a focus on prehistoric rock art, trails, historic railroad area, and biological heritage (Map 2-9p). Within this area:</p> <ul style="list-style-type: none"> <li>Focus on the education and interpretation (outside of the Wilderness boundaries) of the following locations and topics: Bridgeport Siding, rock art, Denver and Rio Grande Railroad, historic and current ranching, trails (e.g., Ute trails, mining roads, paleo roads), natural resources (particularly BLM special status species found within the area)</li> <li>Make the Wilderness within the heritage area Day Use Only to reduce vandalism and theft.</li> </ul>



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
243	No similar action in existing RMPs.	<p>Manage 2,034 acres in High Park as the High Park Heritage Area to maintain and protect the integrity of setting and preserve the natural landscape characteristics of the area. This area will be used to provide Native American groups with traditional use opportunities (Map 2-9p). Within this area:</p> <ul style="list-style-type: none"> <li>• Provide access to traditional use areas for members of Native American Tribes. This could mean opening or allowing administrative access for traditional use purposes.</li> <li>• Promote natural processes in land management</li> <li>• Intensively manage recreation or livestock grazing use in the area if monitoring indicates that desired natural landscapes and settings are being degraded by these uses, as defined by biological objectives.</li> <li>• Manage using VRM Class I</li> <li>• Promote ponderosa pine natural regeneration and expansion in the area</li> </ul>	<p>Manage 2,034 acres in High Park as the High Park Heritage Area to maintain and protect the integrity of setting and preserve the natural landscape characteristics of the area. This area will be used to provide Native American groups with traditional use opportunities (Map 2-9p). Within this area:</p> <ul style="list-style-type: none"> <li>• Provide access to traditional use areas for members of Native American Tribes. This could mean opening, allowing administrative access or construction of new routes for traditional use purposes</li> <li>• Promote natural processes in land management</li> <li>• Intensively manage recreation or livestock grazing use in the area if monitoring indicates that desired natural landscapes and settings are being degraded by these uses, as defined by biological objectives.</li> <li>• Manage using VRM Class I</li> <li>• Promote ponderosa pine regeneration and expansion in the area, while minimizing the use of ground disturbing</li> </ul>	<p>Same as Alternative C, except that the area will be managed using VRM Class II, not VRM Class I.</p>	<p>Manage 2,034 acres in High Park as the High Park Heritage Area to maintain and protect the integrity of setting and preserve the natural landscape characteristics of the area. This area will be used to provide Native American groups with traditional use opportunities (Map 2-9p). Within this area:</p> <ul style="list-style-type: none"> <li>• Provide access to traditional use areas for members of Native American Tribes. This could mean opening, allowing administrative access or construction of new routes for traditional use purposes</li> <li>• Promote natural processes in land management</li> <li>• Intensively manage recreation or livestock grazing use in the area if monitoring indicates that desired natural landscapes and settings are being degraded by these uses, as defined by biological objectives.</li> <li>• Manage using VRM Class II</li> <li>• Promote ponderosa pine regeneration and</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
		<p>through restrictions on allowable uses.</p> <ul style="list-style-type: none"><li>● Consult with Native American tribes to set management objectives</li></ul>	<p>vegetation treatments (preference would be for the use of prescribed fire and hand treatments (e.g., chain saws)).</p> <ul style="list-style-type: none"><li>● Consult with Native American tribes to set management objectives</li></ul>		<p>expansion in the area, while minimizing the use of ground disturbing vegetation treatments (preference would be for the use of prescribed fire and hand treatments (e.g., chain saws)).</p> <ul style="list-style-type: none"><li>● Consult with Native American tribes to set management objectives</li></ul>
244	No similar action in existing RMPs.	<p>Manage 450 acres in Leonards Basin as the Leonards Basin Heritage Area to maintain and protect the integrity of setting and place with a focus on prehistoric rock art, geological and biological heritage (Map 2-9p). Within this area:</p> <ul style="list-style-type: none"><li>● Limit access to rock art sites to traditional and administrative purposes</li><li>● Intensively manage recreation or livestock grazing use in the area if monitoring indicates that desired natural landscapes and settings are being degraded by these uses, as defined by biological objectives</li><li>● Make the Wilderness area portion of the area day-use only</li></ul>	<p>Manage 450 acres in Leonards Basin as the Leonards Basin Heritage Area to maintain and protect the integrity of setting and place with a focus on prehistoric rock art, geological and biological heritage (Map 2-9p). Within this area:</p> <ul style="list-style-type: none"><li>● Focus management on the education and interpretation of prehistoric rock art</li><li>● Intensively manage recreation or livestock grazing use in the area if monitoring indicates that desired natural landscapes and settings are being degraded by these uses, as defined by biological objectives</li><li>● Prohibit camping within 100 meters of cultural sites in the area within the Wilderness Boundary</li></ul>	<p>Manage 450 acres in Leonards Basin as the Leonards Basin Heritage Area to maintain and protect the integrity of setting and place with a focus on prehistoric rock art, geological and biological heritage (Map 2-9p). Within this area:</p> <ul style="list-style-type: none"><li>● Focus management on the education and interpretation of prehistoric rock art</li><li>● Intensively manage recreation or livestock grazing use in the area if monitoring indicates that desired natural landscapes and settings are being degraded by these uses, as defined by biological objectives</li><li>● Make the Wilderness area portion of the area day-use only</li></ul>	

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
245	No similar action in existing RMPs.	No similar action.	No similar action.	Manage the Escalante Canyon and Hunting Ground RMAs as heritage area to provide opportunities for heritage tourism (Map 2–8d). See the Recreational Use (row 323) and National Historic Trails (row 601) sections for actions related to these areas).	Manage the Escalante Canyon RMA (Map 2–8p) as a heritage area to provide opportunities for heritage tourism. See the Recreational Use section (row 323) for more details.
246	<b>Goal:</b> Promote activities that fall under Section 110 of the National Historic Preservation Act (NHPA), including interpretive materials, research surveys, site stabilization, detailed recording and monitoring.				
247	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Promote professional and avocational cultural resource research, preservation, and excavation.			<b>Objective:</b> Promote professional cultural resource research, preservation, and excavation.
248	<b>Objective:</b> Conduct Section 110 (of the NHPA) surveys.		<b>Objective:</b> Conduct Section 110 (of NHPA) surveys on a minimum of 100 acres per year	<b>Objective:</b> Conduct Section 110 (of NHPA) surveys on a minimum of 50 acres per year	<i>Same as Alternative A:</i>  <b>Objective:</b> Conduct Section 110 (of the NHPA) surveys.
248a	No similar action.	No similar action.	No similar action (see row above).	No similar action (see row above).	<b>Strive to conduct</b> Section 110 (of NHPA) surveys on 100 or more acres per year.
249	No similar action in existing RMPs.	Prioritize Section 110 efforts on inventory of areas that are likely to contain the most scientifically valuable archaeological resources, and testing of “needs data” sites.	Prioritize Section 110 efforts on inventory of areas that are likely to contain the most scientifically valuable archaeological resources.	Prioritize Section 110 efforts on inventory of areas that are likely to contain the most scientifically valuable archaeological resources, testing of “needs data” sites and research excavation of eligible sites.	
250	No similar action in existing RMPs.	Develop a Monitoring Plan that identifies sites that are to receive regular patrols and documentation by BLM law enforcement rangers.			
251	<b>Goal:</b> Reduce imminent threats from natural or human-caused deterioration and resolve potential conflicts with other resource uses by ensuring that all authorizations for land use and resource use comply with Section 106 of the National Historic Preservation Act.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
252	<b>Objective:</b> Protect and preserve remaining high value sites as prescribed by law and policy or as opportunities and situations arise (BLM 1987).	<b>Objective:</b> Protect and preserve remaining high value sites as prescribed by law and policy or as opportunities and situations arise. Testing and data recovery is the preferred method to mitigate the scientific potential of sites allocated to scientific or experimental use.	<b>Objective:</b> Protect and preserve remaining high value sites as prescribed by law and policy or as opportunities and situations arise. The preferred method of cultural resource mitigation or protection would be to design projects so as to avoid sites.	<b>Objective:</b> Same as Alternative B	<b>Objective:</b> Protect and preserve remaining high value sites as prescribed by law and policy or as opportunities and situations arise. The preferred method of cultural resource mitigation or protection would be to design projects so as to avoid sites.
253	No similar action in existing RMPs.	Prohibit surface-disturbing activities within 100 meters (328 feet) around sites allocated to Public Use, Scientific Use, Conservation Use and Experiment Use.		Apply SSR within 100 meters (328 feet) of sites allocated to Public Use, Scientific Use, Conservation Use, and Experimental Use.	Apply SSR within 100 meters (328 feet) of eligible or potentially eligible sites allocated to public, scientific, conservation, and experimental uses. Consider applying SSR within 100 meters of non-eligible, allocated sites based on the nature of the development, site type and topography.
254	No similar action in existing RMPs.	Prohibit surface-disturbing activities within 200 meters (656 feet) around sites allocated to traditional use.		Apply SSR to surface-disturbing activities within 200 meters (656 feet) of sites allocated to Traditional Use.	Apply SSR within 200 meters (656 feet) of eligible or potentially eligible sites allocated to traditional use. Consider applying SSR within 200 meters of non-eligible sites allocated to traditional use based on the nature of the development, site type and topography.
255	No similar action in existing RMPs.	Identify cultural properties requiring physical or administrative protection measures to protect site integrity and implement necessary measures.			
256	No similar action in existing RMPs.	Authorized actions must include a stipulation that requires the applicant to protect cultural resources from damages associated with inadvertent discovery or intentional or unauthorized use.			
257	<b>Goal:</b> Uphold government-to-government responsibilities with Native Americans to manage cultural resources and landscapes associated with their ancestral homeland and to accommodate traditional uses.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
258	<b>Objective:</b> Engage in cooperative projects with Native American tribes with connections to the D-E NCA. Through consultation, continue to compile information regarding traditional cultural properties, sacred sites, traditional uses, and cultural landscapes. Information obtained from available literature and field visits to known Ute cultural resources in consultation with the Ute Tribes provided the following management actions. Consultation with other Native American Tribes may result in new information, identifying new resources that will require additional protection.				
259	No similar action in existing RMPs.	In coordination with other travel management objectives, work with tribal cultural departments and tribal members to reestablish and interpret traditional trails.			
260	Cooperate with and include Native American Tribes with land-use planning.	In consultation with Native Americans and other groups with heritage values in the D-E NCA, develop additional heritage areas (additional to the areas described above) and manage those landscapes to preserve the existing character of the cultural and physical landscape to the maximum extent possible.			
261	No similar action in existing RMPs.	Maintain and protect natural and cultural resource conditions to enhance opportunities for Native Americans to use cultural landscapes and properties in their traditional homeland.	Maintain and, where appropriate, improve natural and cultural resource conditions to enhance opportunities for Native Americans to use cultural landscapes and properties in their traditional homeland.		
262	No similar action in existing RMPs.	Considering other resource decisions to the extent possible, work with tribal cultural departments and tribal members to provide administrative access to authorized tribal members for the collection of appropriate natural resources needed to maintain traditional lifeways.			Considering other resource decisions to the extent possible, work with tribal cultural departments and tribal members to provide administrative access to authorized tribal members to access appropriate cultural properties and/or locations for the collection of appropriate natural resources needed to maintain traditional lifeways.
263	Wilderness				
264	Notes: the Wilderness has been subdivided into three Wilderness Zones (Map 2–10p))  <i>The wilderness value of naturalness is defined by PPSV indicators presented in Appendix G. Colorado hookless cactus is included in the PPSV indicators, and is therefore an indicator of naturalness, not an indicator of supplemental values. Other threatened and endangered species are considered supplemental values, along with cultural and paleontological resources.</i>				
265	<b>Goal:</b> Preserve, protect, or enhance the qualities of wilderness character in the Dominguez Canyon Wilderness.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
266	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Manage the Wilderness with an emphasis on protecting untrammelled character and opportunities for primitive and unconfined recreation.	<b>Objective:</b> Manage the Wilderness with an emphasis on protecting and restoring supplemental values (federally listed species, cultural and paleo resources), naturalness and opportunities for solitude.	<b>Objective:</b>  <b>Wilderness Zone 1:</b> Manage with an emphasis on protecting and restoring supplemental values (federally listed species, cultural and paleo resources).  <b>Wilderness Zone 2:</b> Manage with an emphasis on protecting and improving the area's undeveloped nature and opportunities for solitude.  <b>Wilderness Zone 3:</b> Manage with an emphasis on protecting and restoring naturalness, and protecting opportunities for primitive and unconfined recreation.	<b>Objective:</b>  <b>Wilderness Zone 1:</b> Manage with an emphasis on protecting and restoring naturalness and supplemental values (federally listed species, cultural and paleo resources).  <b>Wilderness Zone 2:</b> Manage with an emphasis on protecting supplemental values, and protecting and restoring naturalness and opportunities for solitude  <b>Wilderness Zone 3:</b> Manage with an emphasis on protecting supplemental values, and protecting and restoring naturalness and opportunities for primitive and unconfined recreation
267	Allow trammeling only as needed to meet the above wilderness objectives, or in the case of emergencies where such an action is needed for the protection of public health and safety.				
268	For any non-emergency implementation action in the Wilderness, conduct and use a minimum requirements analysis to achieve the resource objectives (emergency involves wildland fire activities and the health and safety of persons in the area) (see Appendix H).				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
269	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Allow natural processes to determine the condition of biological resources within the Wilderness.	<p><b>Objective:</b> Enhance or maintain the condition of attributes for priority species and vegetation attributes that are currently in “good” or “very good” condition (Appendix G).</p> <p>Enhance the rankings for priority species and vegetation attributes that are currently in “fair” condition to move toward “very good” condition. Enhance the rankings for priority species and vegetation attributes that are currently in “poor” condition to move toward “good” condition (Appendix G).</p>	<p><b>Objective:</b></p> <p>Wilderness Zones 1 and 2: Enhance or maintain the condition of attributes for priority species and vegetation (Appendix G).</p> <p>Wilderness Zone 3: Same as Alternative C</p>	<p><b>Objective:</b></p> <p>Enhance the rankings for priority species and vegetation attributes that are currently in “fair” or “poor” condition. (Appendix G).</p>
269a	No similar action in existing RMPs.	When monitoring indicates degradation of wilderness characteristics, restrict allowable wilderness uses before implementing active management. (e.g., restrict camping in areas with noxious and/or invasive weed patches before spraying weeds).	Evaluate allowable wilderness use restrictions and active management actions inside the Wilderness on a case-by-case basis.	Same as C.	If monitoring indicates allowable wilderness uses are contributing to “fair” or “poor” conditions, include use restrictions as part of any active management strategy.
270	No similar action in existing RMPs.	Do not conduct vegetation treatments in the Wilderness (exception: where substantial degradation to wilderness values would occur in the absence of such treatments).	Authorize the minimum number of vegetation treatments (e.g., planned fire, chemical, mechanical, biological) necessary to meet naturalness objectives, or as needed to achieve cultural resource objectives.		Do not conduct vegetation treatments in the Wilderness, unless PPSV indicators are determined to be in “poor” or “fair.” Then conduct the minimum number of vegetation treatments (e.g., planned fire, chemical, biological) necessary to meet naturalness objectives.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
271	No similar action in existing RMPs.	Manage wildfire using MIST (Minimum Impact Suppression Techniques) to promote fire as a natural process, and control only in instances where fire threatens life and/or property outside the Wilderness, or as needed to fulfill legal and tribal obligations (Exception: to meet historic preservation objectives).	Manage wildfires using MIST (Minimum Impact Suppression Techniques) to help achieve wilderness objectives, prevent substantial degradation to any wilderness value, and/or protect life and/or property outside the Wilderness.		When suppressing a wildfire, use Minimum Impact Suppression Tactics (MIST) to limit impact to wilderness values.
272	No similar action in existing RMPs.	Limit post-fire rehabilitation to instances where conditions threaten public health and safety, or where substantial degradation could occur to natural and supplemental values.	Allow post-fire rehabilitation if such actions help achieve wilderness and naturalness objectives (or to prevent substantial degradation to any wilderness value).		Do not conduct post-fire rehabilitation in the Wilderness, unless PPSV indicators are determined to be “poor” or “fair.” Then allow post-fire rehabilitation if such actions help achieve naturalness objectives.
273	No similar action in existing RMPs.	No similar action.	Require all overnight visitors to pack out solid human waste.	Require all overnight visitors to bury solid human waste in a cathole more than 100 meters from a natural water source (rivers, creeks, springs, and seeps).	<b>Wilderness Zone 1:</b> No overnight camping.  <b>Wilderness Zone 2 of Big Dominguez Canyon:</b> require all overnight visitors to pack out solid human waste.  <b>Wilderness Zone 3:</b> Same as Alternative D.
274	No similar action in existing RMPs.	Monitoring devices (e.g., radio collars, stream gauges, cameras) would only be allowed in cases where such devices would prevent substantial wilderness resource degradation.	Monitoring devices (e.g., radio collars, stream gauges, cameras) may be installed to meet naturalness and supplemental value objectives.		Authorize the minimum number of installations necessary to monitor trends and conditions of naturalness (PPSV indicators) and opportunities for solitude or unconfined recreation).



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
275	No similar action in existing RMPs.	No similar action.	Close areas within 100 meters of a natural water source to overnight camping.	Close areas within 50 meters of a natural water source to overnight camping.	Limit camping to designated sites in the Gunnison river corridor.  Limit camping in other riparian areas to designated sites when conditions are shown to be deteriorating as a result of this use, on the basis of riparian indicators identified in Appendix G.
276	No similar action in existing RMPs.	No similar action.	Allow non-emergency landing of aircraft inside the Wilderness only for the purpose of protecting or enhancing naturalness (e.g., bighorn sheep management).		Do not allow non-emergency landing of aircraft, motorized vehicle uses, motorized equipment uses, and mechanized transport uses inside the Wilderness, unless PPSV indicators are determined to be “poor” or “fair.” Then allow the minimum number necessary to protect or enhance naturalness (e.g., bighorn sheep monitoring to reduce disease risk).
277	No similar action in existing RMPs.	Domestic non-working dogs must be on leash within bighorn sheep range (includes substantial portions of the Wilderness), as defined by CPW.	Domestic non-working dogs must be on leash within bighorn sheep production and winter concentration areas (includes portions of the Wilderness) from December 1 to May 1 (minor changes to these dates	No similar action.  Wilderness Zone 1: Domestic non-working dogs must be on leash to protect desert bighorn sheep (Map 2–10p).	Wilderness Zone 1: Domestic non-working dogs must be on leash to protect desert bighorn sheep (Map 2–10p).

Row	Alternative A (No Action)	Alternative B	Alternative C		Alternative D	Proposed Plan Alternative
			may be made in coordination with CPW).			
278	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Protect supplemental values (T&E species, cultural and paleo resources).	<b>Objective:</b> Protect and restore supplemental values (T&E species, cultural and paleo resources).		<b>Objective:</b>  Wilderness Zone 1: Same as Alternative C  Wilderness Zones 2 and 3: Same as Alternative B	<b>Objective:</b>  Wilderness Zone 1:  Protect and restore supplemental values (T&E species, cultural and paleo resources).  Wilderness Zones 2 and 3: Protect supplemental values (T&E species, cultural and paleo resources).
279	No similar action in existing RMPs.	Wilderness Zone 1 (includes a portion of the Big Dominguez Canyon Heritage Area and all of the Rambo/Little Dominguez Canyon Heritage Area) and the Wilderness portion of the Leonards Basin Heritage Area: Close to overnight camping (Map 2-9p).	Wilderness Zone 1 (includes a portion of the Big Dominguez Canyon Heritage Area and all of the Rambo/Little Dominguez Canyon Heritage Area) and the Wilderness portion of the Leonards Basin Heritage Area: Prohibit camping within 100 meters of cultural sites and/or historic buildings (Map 2-9p).		Wilderness Zone 1 (includes a portion of the Big Dominguez Canyon Heritage Area and all of the Rambo/Little Dominguez Canyon Heritage Area) and the Wilderness portion of the Leonards Basin Heritage Area: Close to overnight camping (Map 2-9p).	Wilderness Zone 1 (includes a portion of the Big Dominguez Canyon Heritage Area and all of the Rambo/Little Dominguez Canyon Heritage Area) and the Wilderness portion of the Leonards Basin Heritage Area: Close to overnight camping (Map 2-9p).
280	No similar action in existing RMPs.	No similar action.	Wilderness Zone 1: Designate as limited to designated routes for horse and foot travel to enhance supplemental values.		No similar action.	Wilderness Zone 1: Designate as limited to existing routes for horse travel to enhance supplemental values. Allow off-route foot travel. Close trails or areas to foot and horse travel where necessary to protect resources (e.g., trails that lead to cultural sites not allocated to public use).

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					Inventory routes in Zone 1 to update existing BLM inventory and produce associated map for public.
281	No similar action in existing RMPs.	Implement temporary area or activity closures for the protection of supplemental values only where such closures are necessary to prevent substantial degradation to (or loss of) supplemental values.	Implement temporary area or activity closures as needed to protect and/or restore supplemental values.	Wilderness Zone 1: Same as Alternative C  Wilderness Zones 2 and 3: Same as Alternative B	
282	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Protect the undeveloped nature of the Wilderness by maintaining the current nature and number of inventoried structures (see Keeping it Wild Monitoring in RMP Chapter 3).	<b>Objective:</b> Protect the undeveloped nature of the Wilderness by minimizing the number of new structures.	<b>Objective:</b>  Wilderness Zones 1 and 3: Same as Alternative C  Wilderness Zone 2: Same as Alternative B	<b>Objective:</b> Protect the undeveloped nature of the Wilderness by minimizing the number of new structures.
283	No similar action in existing RMPs.	Leave in place and allow natural processes to degrade existing human developments inside the Wilderness (Exception: to meet historic preservation objectives).	Remove existing human developments not needed to achieve wilderness resource objectives (Exceptions: necessary livestock developments that existed on the date of designation, significant cultural resources).		
284	No similar action in existing RMPs.	Do not authorize the construction or installation of new developments in the Wilderness (exception: when needed to prevent substantial degradation of wilderness values or to protect public health and safety).	Authorize the construction or installation of the minimum number of new developments (e.g., livestock water facilities, fences) necessary to protect or enhance naturalness, supplemental values, opportunities for solitude, or to protect public health and safety.	Wilderness Zone 1: Authorize the construction or installation of the minimum number of new developments necessary to protect or enhance supplemental values, or to protect naturalness.  Wilderness Zone 2: Authorize the construction or installation of new developments only in concert with the removal of existing developments.	Authorize the construction or installation of the minimum number of new developments (e.g., livestock water facilities, fences) necessary to protect wilderness values and meet wilderness management objectives.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				Wilderness Zone 3: Allow for the construction of new developments (e.g., livestock water facilities, fences), while minimizing impacts to primitive and unconfined recreation.	
285	Authorize motorized entries for livestock operations using minimum requirements analysis in accordance with congressional grazing guidelines.				
286	Allow the use of motorized vehicles for the Rambo life lease.				Allow the use of motorized vehicles for the duration of the Rambo life lease.
287	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Manage recreation in the Wilderness to provide outstanding opportunities for primitive and unconfined recreation.	<b>Objective:</b> Manage recreation in the Wilderness to provide outstanding opportunities for solitude (defined as an average number of contacts per visit of 4 or fewer).	<b>Objective:</b> Wilderness Zone 1: Manage recreation to support and protect supplemental values.  Wilderness Zone 2: Manage recreation to protect outstanding opportunities for solitude (defined as average number of contacts per visit of 4 or fewer).  Wilderness Zone 3: Manage recreation to provide outstanding opportunities for primitive and unconfined recreation.	<b>Objective:</b> Wilderness Zone 1: Manage recreation to support and protect supplemental values.  Wilderness Zone 2: Manage recreation to protect outstanding opportunities for solitude (defined as an average number of contacts per visit of 4 or fewer).  Wilderness Zone 3: Manage recreation to support and protect naturalness and provide outstanding opportunities for primitive and unconfined recreation.
288	No similar action in existing RMPs.	No similar action.	Limit group size in the Wilderness to 6 people or fewer.	<b>Wilderness Zone 1:</b> Limit group size to 12 people or fewer.  <b>Wilderness Zone 2:</b> Limit group size to 6 people or fewer.  <b>Wilderness Zone 3:</b> Do not limit group size	<b>Wilderness Zone 1:</b> Limit group size to 25 people or fewer. <b>Wilderness Zones 2 and 3:</b> Limit group size to 12 people or fewer.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
289	No similar action in existing RMPs.	Limit visitor use only as necessary to prevent substantial degradation to other wilderness values (i.e., naturalness, undeveloped, and solitude).	Limit visitor use as necessary to protect or improve naturalness, supplemental values and to meet the above objective related to outstanding opportunities for solitude.	Wilderness Zone 1: Limit visitor use as necessary to protect supplemental values.  Wilderness Zones 2: Limit visitor use as necessary to meet the above objective related to outstanding opportunities for solitude.  Wilderness Zone 3: Limit visitor use only as necessary to prevent degradation to other wilderness values (i.e., naturalness, undeveloped, and solitude)	Limit visitor use only as necessary to meet wilderness objectives and/or to protect public health and safety.
289a	No similar action in existing RMPs	Prohibit drilling or the use of permanent equipment for rock climbing.	Same as B	Allow bolting for rock climbing, but require the use of hand-powered drills and a permit.	Require a permit for placement and maintenance of permanent climbing anchors inside the Wilderness. With partners (climbing organizations, local business, wilderness organizations) develop and implement a permitting process.
290	No similar action in existing RMPs.	Identify a trail system that supports outstanding opportunities for primitive and unconfined recreation (see Appendix N, Travel Management).	Identify a trail system to enhance visitor opportunities for solitude (see Appendix N, Travel Management).	Identify a trail system that supports wilderness zone objectives (see Appendix N, Travel Management).  Wilderness Zone 1: Construct new or reroute designated routes to protect cultural resources  Wilderness Zone 2: Construct new routes only when accompanied by a comparable number of route closures that	Identify a trail system that supports wilderness zone objectives (see Appendix N, Travel Management).  <b>Wilderness Zone 1:</b> Construct new or reroute designated routes to protect cultural resources  <b>Wilderness Zone 2:</b> Construct new routes if necessary to improve opportunities for solitude.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				improves opportunities for solitude.  Wilderness Zone 3: Construct new or reroute designated routes to enhance opportunities for primitive types of recreation.	<b>Wilderness Zone 3:</b> Construct new or reroute designated routes to enhance opportunities for primitive types of recreation.
291	No similar action in existing RMPs.	Issue low impact (Class I in Appendix I) commercial special recreation permits	Do not issue commercial permits.	Issue low and medium impact (Class I and Class II in Appendix I) commercial special recreation permits.	Issue low and medium impact (Class I and Class II in Appendix I) commercial <b>and organized group</b> special recreation permits.
292	No similar action in existing RMPs.	No similar action.	Do not provide for exceptions to group size limitations.	For Special Area SRPs, provide for an exception to group size limitations in Wilderness Zone 1 for groups that obtain a Low and medium impact (Class I or II) organized group special recreation permit.	Do not provide for exceptions to group size limitations.
293	<b>Lands with Wilderness Characteristics (outside Dominguez Canyon Wilderness and Remaining Wilderness Study Areas)</b>				
294	<b>Goal:</b> Provide appropriate levels of protection for areas determined to possess wilderness characteristics outside of existing WSAs and Dominguez Canyon Wilderness, while considering competing resource demands and manageability.				
295	<b>Objective:</b> No similar objective in existing RMPs (not managing for wilderness characteristics in these areas).	<b>Objective:</b> Preserve and/or enhance wilderness characteristics in all lands with wilderness characteristics.	<b>Objective:</b> No similar objective (not managing for wilderness characteristics in these areas)	<b>Objective:</b> No similar objective (not managing for wilderness characteristics in these areas)	<b>Objective:</b> Preserve and/or enhance wilderness characteristics in lands managed for their wilderness characteristics.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
296	No similar action in existing RMPs (not managing for wilderness characteristics in these areas).	Manage the following areas for their wilderness characteristics (Map 2–11b): <ul style="list-style-type: none"> <li>• Dominguez Addition (3,025 acres)</li> <li>• Gunnison Slopes (5,194 acres)</li> <li>• Dry Fork of Escalante (7,021 acres)</li> <li>• Cottonwood Canyon (6,576 acres)</li> </ul>	No similar action (not managing for wilderness characteristics in these areas)	No similar action (not managing for wilderness characteristics in these areas)	Manage the following areas for their wilderness characteristics (Map 2–11p): <ul style="list-style-type: none"> <li>• Dry Fork of Escalante (7,021 acres)</li> <li>• Cottonwood Canyon (6,576 acres)</li> </ul>
297	No similar action in existing RMPs.	Manage for solitude and primitive/unconfined recreation in lands with wilderness characteristics by providing opportunities for quiet, non-motorized, non-mechanized recreation.	No similar action.	No similar action.	Same as Alternative B
298	No similar action in existing RMPs.	Consistent with the theme of Alternative B, leave existing human developments in lands with wilderness characteristics in place and allow them to degrade over time (exception: existing and necessary livestock developments).	No similar action.	No similar action.	Leave existing human developments in place in the Dry Fork of Escalante and Cottonwood Canyon and allow them to degrade over time (exception: existing and necessary livestock developments).

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
299	No similar action in existing RMPs.	For any non-emergency implementation action in lands with wilderness characteristics, consider how proposed actions would impact inventoried naturalness and opportunities for solitude and/or primitive and unconfined recreation (emergency involves unplanned, wildfire activities and the health and safety of persons in the area).	No similar action.	No similar action.	For any non-emergency implementation action in the Dry Fork of Escalante and Cottonwood Canyon, consider how proposed actions would impact inventoried naturalness and opportunities for solitude and/or primitive and unconfined recreation (emergency involves unplanned, wildfire activities and the health and safety of persons in the area). In the response to wildfire, use Minimum Impact Suppression Tactics (MIST) to limit impact to wilderness characteristics. Only allow ground disturbing mechanical tactics (e.g., bulldozers) if life and/or property is threatened.
300	No similar action in existing RMPs.	Consistent with theme of Alternative B, allow natural processes to dictate the condition of biological resources in lands with wilderness characteristics unless conditions would substantially deteriorate in the absence of management intervention.	No similar action.	No similar action.	No similar action.



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
301	No similar action in existing RMPs.	Consistent with theme of Alternative B and to protect naturalness, prohibit surface-disturbing activities and new developments within lands with wilderness characteristics (see Appendix B, Map 2–1b).	No similar action.	No similar action.	To protect naturalness, apply SSR within the Dry Fork of Escalante and Cottonwood Canyon (see Appendix B, Map 2–2p).
302	No similar action in existing RMPs.	To protect opportunities for unconfined recreation, limit visitor use only as necessary to prevent substantial degradation to wilderness characteristics (i.e., naturalness and opportunities for solitude).	No similar action.	No similar action.	To protect opportunities for unconfined recreation, limit visitor use in the Dry Fork of Escalante and Cottonwood Canyon only as necessary to prevent substantial degradation to wilderness characteristics (i.e., naturalness and opportunities for solitude).
303	<b>Scenic Resources</b>				
304	<b>Goal:</b> Protect the open spaces, the natural aesthetics, and the scenic vistas that are considered a social, economic, and environmental benefit.				
305	<b>Objective:</b> Maintain visual quality and integrity in accordance with VRM classes. <ul style="list-style-type: none"> <li>• Class I Objective: The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it allows for very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.</li> <li>• Class II Objective: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Changes can be seen but should not attract the attention of the casual viewer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.</li> <li>• Class III Objective: The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.</li> <li>• Class IV Objective: Not applicable in D-E NCA</li> </ul>				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
306	Manage the following acres to achieve VRM class objectives (Map 2–12a):  VRM Class I: 69,238 acres  VRM Class II: 36,769 acres  VRM Class III: 104,871 acres  Undesignated: 420 acres	Manage the following acres to achieve VRM class objectives (Map 2–12b):  VRM Class I: 93,468 acres  VRM Class II: 116,519 acres	Manage the following acres to achieve VRM class objectives (Map 2–12c):  VRM Class I: 71,679 acres  VRM Class II: 138,308 acres	Manage the following acres to achieve VRM class objectives (Map 2–12d):  VRM Class I: 107,636 acres  VRM Class II: 102,351 acres	Manage the following acres to achieve VRM class objectives (Map 2–12p):  VRM Class I: 82,830 acres  VRM Class II: 127,169 acres.
307	No similar action in existing RMPs.	Prioritize co-location of communication towers, facilities, and associated structures with existing communication sites to minimize overall visual impacts.			Prioritize placing communication towers, facilities, and associated structures adjacent to existing communication sites to minimize overall visual impacts.
308	No similar action in existing RMPs.	No similar action.	Reduce visual impacts from past and minimize visual impacts from future vegetation treatments, consistent with VRM objectives.	Reduce visual impacts from past and minimize visual impacts from future vegetation treatments, consistent with VRM objectives.	
309	No similar action in existing RMPs.	Manage the following heritage areas as VRM I (Map 2-9p):  ● Big Dominguez Canyon (1,652 acres, note that part of this heritage area is within the Wilderness and would be managed as VRM I regardless of this action)  ● High Park (2,034 acres)	Manage heritage areas outside of the Wilderness as VRM II (Map 2-9p).	Manage heritage areas outside of the Wilderness as VRM II (Map 2-9p).	
310	Manage the Wilderness and Wilderness Study Area as VRM I.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
311	No similar action in existing RMPs.	Manage the following lands with wilderness characteristics as VRM I (Map 2–11b): <ul style="list-style-type: none"> <li>• Gunnison Bluffs</li> <li>• Dominguez Addition</li> <li>• Cottonwood Canyon</li> <li>• Dry Fork of Escalante</li> </ul>	No similar action.	No similar action.	Manage the following lands with wilderness characteristics as VRM I (Map 2–11p): <ul style="list-style-type: none"> <li>• Cottonwood Canyon</li> <li>• Dry Fork of Escalante</li> </ul>
312	Manage Escalante Canyon under VRM II guidelines to maintain its scenic qualities (BLM 1989a)	No similar action.	No similar action.	Manage the following RMAs as VRM I in order to meet recreation setting objectives: <ul style="list-style-type: none"> <li>• Hunting Ground SRMA</li> <li>• Gunnison Slopes SRMA</li> <li>• Cottonwood Canyon SRMA</li> </ul>	No similar action.
313	No similar action in existing RMPs.	Designate the Old Spanish NHT corridor VRM II (Exception: allow construction of facilities that support interpretive opportunities).		Designate the Old Spanish NHT corridor VRM I (Exception: allow construction of facilities that support retrace ment and interpretive opportunities).	Designate the Old Spanish NHT corridor VRM II
314	No similar action in existing RMPs.	Construct facilities to repeat the basic elements of form, line, color, and texture found in the predominant natural features of the adjacent landscape.			Construct facilities to repeat the basic elements of form, line, color, and texture found in the predominant natural features of the adjacent landscape.
315	<b>Air Resources</b>				
316	<b>Goal:</b> Protect air quality and the natural soundscape within and surrounding the D-E NCA				<b>Goal:</b> Protect air quality within and surrounding the D-E NCA.
317	<b>Objective:</b> Ensure that the air quality within the D-E NCA meets State and Federal air quality standards and regulations				
318	Obtain State of Colorado permits for emissions for all prescribed burns.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
319	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> No similar objective	<b>Objective:</b> Reduce dust and particulate emissions from BLM-sanctioned activities within the D-E NCA.	<b>Objective:</b> No similar objective	<b>Objective:</b> No similar objective
320	No similar action in existing RMPs.	No similar action.	Implement appropriate BMPs (Appendix J) and measures to reduce small particulate pollution (PM <sub>10</sub> and PM <sub>2.5</sub> ) resulting from management actions (e.g., dust abatement on existing and new road construction).	No similar action.	No similar action.
321	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> No similar objective	<b>Objective:</b> Reduce noise impacts within the D-E NCA	<b>Objective:</b> No similar objective	<b>Objective:</b> No similar objective
322	No similar action in existing RMPs.	No similar action.	Reduce, as much as practicable, the number of motorized routes within high sound-impact areas (canyon rims, overlooks, etc.).	No similar action.	No similar action.
323	<b>Recreational Use</b>				
324	Please see the Wilderness section (row 263) for management guidance on recreation in the Dominguez Canyon Wilderness.				
325	<b>D-E NCA-Wide Recreation</b>				
326	<b>Goal:</b> Provide a diversity of recreational opportunities that support outdoor-oriented lifestyles, add to participants' and local communities' quality of life, and foster protection of natural and cultural resources.				
327	<b>Objective:</b> Protect resources, meet legal requirements for visitor health and safety, and mitigate resource user conflicts. Ensure the continued availability of outdoor recreational opportunities that the public seeks and that are not readily available from other public or private entities (BLM 1987).  Manage for extensive and diverse recreational use (BLM 1989a).	<b>Objective:</b> Provide quality recreational opportunities that are consistent with, and contribute to, the conservation, protection and enhancement of the resources that were identified as purposes of the designation of the D-E NCA.			<b>Objective:</b> Provide quality recreational opportunities that are consistent with, and contribute to, the conservation, protection and enhancement of the resources that were identified as purposes of the designation of the D-E NCA. Manage recreation consistent with biological, natural and cultural resource objectives.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
328	No similar action in existing RMPs.	Ensure that all sources of D-E NCA recreation information (e.g., kiosks, brochures, web sites) include an educational component regarding the D-E NCA's purposes.			Ensure that all sources of D-E NCA recreation information (e.g., kiosks, brochures, web sites) include an educational component regarding the D-E NCA's purposes.
329	No similar action in existing RMPs.	The BLM would not issue competitive SRPs that authorize motorized events where speed or time determines winners.		The BLM may issue competitive SRPs that authorize motorized events where speed or time determines winners.	The BLM would not issue competitive SRPs that authorize motorized events where speed or time determines winners.
330	Allow geocaching and similar activities without BLM authorization.	Prohibit geocaching and similar activities in the D-E NCA	Geocaching and similar activities require BLM authorization prior to placement	Same as Alternative A.	Navigational recreational activity (e.g., geocaching) requires BLM authorization prior to placement. Allow physical caches outside the Wilderness. Only allow earth (not physical) caches inside the Wilderness. Evaluate existing sites for resource concerns.
331	Allow metal detecting activities without BLM authorization.	Prohibit metal detecting activities to protect cultural and natural resources from vandalism and theft, unless administratively authorized.		Same as Alternative A.	Prohibit metal detecting activities to protect cultural and natural resources from vandalism and theft, unless administratively authorized.
332	No similar action in existing RMPs. Area closures may be made on a case-by-case basis.	When camping contributes to a failure to meet cultural, biological, recreation and other natural resource objectives, close areas to camping.	When camping contributes to a failure to meet cultural, biological, recreation and other natural resource objectives, designate undeveloped campsites and limit overnight camping to designated undeveloped sites so as to help achieve these objectives.		When camping or campfires contribute to a failure to meet cultural, biological, recreation and other natural resource objectives: <ul style="list-style-type: none"> <li>• close areas to camping and campfires</li> <li>• or designate campsites and limit overnight camping and/or campfires to designated sites.</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
333	No similar action in existing RMPs.	Do not implement recreation fees.	As provided by the guidelines in the Federal Lands Recreation Enhancement Act (FLREA; Public Law 108-447), implement recreation fees as appropriate to maintain visitor services and facilities through management of sites or areas as a U.S. Fee Area.		As provided by the guidelines in the Federal Lands Recreation Enhancement Act (FLREA; Public Law 108-447), implement recreation fees as appropriate to maintain visitor services and facilities through management of sites or areas as a U.S. fee area.
334	No similar action in existing RMPs. Paintball activities are prohibited in the following area: <ul style="list-style-type: none"> <li>• The Potholes Recreation Site (Escalante Canyon)</li> <li>• Escalante put-in</li> </ul>	Prohibit paintball activities in the D-E NCA to protect the D-E NCA's scenic resources.		Same as Alternative A.	Prohibit paintball activities in the D-E NCA to protect the D-E NCA's scenic resources.
335	No similar action in existing RMPs. Glass containers are prohibited in the following area: <ul style="list-style-type: none"> <li>• The Potholes Recreation Site (Escalante Canyon)</li> </ul>	Prohibit glass containers for beverages, food or other items to protect the D-E NCA's scenic resources.	Prohibit glass containers for beverages, food or other items in the following areas to protect the scenic resources of these areas (2–8c): <ul style="list-style-type: none"> <li>• Escalante Canyon</li> <li>• Gunnison River RMA</li> </ul>	Same as Alternative A (use existing public lands regulations that prohibit littering to enforce issues associated with glass bottles).	Prohibit glass containers for beverages, food or other items in the following areas to protect the scenic resources of these areas (2–8c): <ul style="list-style-type: none"> <li>• Potholes Recreation Site (Escalante Canyon).</li> <li>• Gunnison River RMA</li> </ul> In other areas of the NCA, if monitoring data indicate an increase in broken glass that negatively impacts the NCA's scenic resources, consider prohibiting glass containers in the NCA.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
336	No similar action in existing RMPs. Temporary closures are allowed to protect public health and safety.	Do not implement temporary area or activity closures, except where necessary to protect public health and safety.	Implement temporary area or activity closures as needed to achieve biological, cultural and wilderness objectives, as well as to protect public health and safety.		Implement temporary area or activity closures as needed to achieve biological, cultural and wilderness objectives, as well as to protect public health and safety.
337	Allow recreational prospecting at the Rattlesnake Gulch site consistent with casual mining regulations and restricted to collection of material with non-motorized equipment below the surface of the water. Close the area to recreational prospecting if resource conditions warrant restrictions or closures. Gold panning is allowed throughout the NCA.	Close the D-E NCA to all recreational prospecting.		Allow recreational prospecting at the Rattlesnake Gulch site consistent with casual mining regulations and restricted to collection of material with non-motorized equipment below the surface of the water. Close the area to recreational prospecting if resource conditions warrant restrictions or closures. Close the rest of the D-E NCA to all recreational prospecting.	Allow recreational gold panning in the NCA. Panning will be restricted to collection of material with non-motorized and non-mechanized equipment below the surface of the water. It will also be restricted to processing of material with non-motorized and non-mechanized equipment. Re-evaluate if resource conditions warrant restrictions or closures. Close the D-E NCA to all other forms of recreational prospecting.
338	No similar action in existing RMPs.	All SRPs will be evaluated using Permit Evaluation Factors and Permit Classification System (see Appendix I).			All SRPs will be evaluated using Permit Evaluation Factors and Permit Classification System (see Appendix I). Monitoring will identify effectiveness of permit classification system and adjustments would be made if determined that goals and objectives are not being met.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
339	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Reduce known or identified unhealthy or unsafe human-created conditions, and achieve a minimum level of conflict between recreation participants and between recreation and other resource uses.			<b>Objective:</b> Reduce known or identified unhealthy or unsafe human-created conditions, and achieve a minimum level of conflict between recreation participants and between recreation and other resource uses.
340	Require portable toilet systems and fire pans along the Gunnison River for overnight camping (BLM 2000c)	Require solid human waste and fire ash to be packed out using portable toilet systems and fire pans for all overnight camping in undeveloped camp sites in all areas outside of the Dominguez Canyon Wilderness	Require solid human waste and fire ash to be packed out using portable toilet systems and fire pans for all overnight camping in undeveloped camp sites in the following recreation management areas: <ul style="list-style-type: none"> <li>• Gunnison River</li> <li>• Cactus Park</li> </ul>	Require solid human waste and fire ash to be packed out using portable toilet systems and fire pans for all overnight camping in undeveloped camp sites in the following recreation management areas: <ul style="list-style-type: none"> <li>• The Hunting Ground</li> <li>• Gunnison River</li> <li>• Cactus Park</li> <li>• Sawmill Mesa</li> <li>• Escalante Canyon</li> </ul>	Require solid human waste and fire ash to be packed out using portable toilet systems and fire pans for all overnight camping in undeveloped camp sites in the following recreation management areas: <ul style="list-style-type: none"> <li>• Gunnison River</li> <li>• Cactus Park</li> <li>• Escalante Canyon</li> <li>• Other areas if monitoring indicates impacts to dispersed campsites from human waste or fire ash.</li> </ul>
341	No similar action in existing RMPs.	Reduce visitor conflicts using strategies that separate conflicting recreation uses.	Reduce visitor conflicts by managing for targeted participants, activities and outcomes.		In the following ERMAs, use the following strategies to reduce conflicting user interactions: 1) clearly communicate recreation management objectives for different RMAs; 2) manage RMAs based on social and environmental carrying capacities; 3) separate uses in time or space; 4) educate users to ensure they know



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					<p>what to expect in different RMAs:</p> <ul style="list-style-type: none"> <li>• Hunting Ground ERMA</li> <li>• Ninemile Hill ERMA</li> <li>• Sawmill Mesa/Wagon Park Dispersed ERMA</li> <li>• East Creek ERMA</li> </ul> <p>In the following SRMAs, reduce conflicting user interactions by using the strategies listed above for ERMAs plus promote only those activities that are compatible with targeted activities and outcomes (experiences and benefits) outlined in the RMA objective:</p> <ul style="list-style-type: none"> <li>• Gunnison River SRMA</li> <li>• Cactus Park SRMA</li> <li>• Escalante Canyon SRMA</li> </ul>
342	<b>Objective:</b> No similar objective	<b>Objective:</b> Manage shooting activities for an appropriate balance between this recreational use and protection of the resources and values identified as the purposes of the D-E NCA in the Omnibus Act, the ability of the BLM to meet its recreational outcome and setting objectives, and the ability of the BLM to minimize issues related to public health and safety and conflict between recreation users and private landowners.			<b>Objective:</b> Manage shooting activities for an appropriate balance between this recreational use and protection of the resources and values identified as the purposes of the D-E NCA in the Omnibus Act, the ability of the BLM to meet its recreational outcome and setting objectives, and the ability of the BLM to minimize issues

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					related to public health and safety and conflict between recreation users and private landowners.
343	Continue to allow hunting throughout the D-E NCA (210,012 acres) in accordance with CPW regulations				
344	<p>No similar action in existing RMPs.</p> <p>Discharge of firearms for recreational target shooting is allowed throughout the D-E NCA, with the following exceptions (Map 2-7a):</p> <ul style="list-style-type: none"> <li>• The Potholes Recreation Site (Escalante Canyon)</li> <li>• Escalante put-in</li> <li>• Dominguez campground</li> </ul>	<p>Close the D-E NCA to recreational target shooting, which includes discharge of firearms, pellet/BB guns, air soft guns, archery. (Map 2-7b).</p>	<p>Close the following areas (totaling 104,999 acres) to recreational target shooting, which includes discharge of firearms, pellet/BB guns, air soft guns, archery (Map 2-7c):</p> <ul style="list-style-type: none"> <li>• Dominguez Canyon Wilderness (for protection of outstanding opportunities for solitude, protection of naturalness and protection of unique and supplemental values, particularly sensitive cultural resources)</li> <li>• Gunnison River SRMA (for protection of public health and safety, to minimize conflicts with interspersed private landowners, and due to incompatibility between recreational target shooting and the BLM's recreation outcome and setting objectives for this area, and for protection of cultural resources, particularly rock art).</li> <li>• Cactus Park SRMA (for protection of public health and safety, and due to incompatibility between recreational target shooting</li> </ul>	<p>Close the following areas (totaling 156,942 acres) to recreational target shooting, which includes discharge of firearms, pellet/BB guns, air soft guns, archery (Map 2-7d):</p> <ul style="list-style-type: none"> <li>• Dominguez Canyon Wilderness (for protection of outstanding opportunities for solitude, protection of naturalness and protection of unique and supplemental values, particularly sensitive cultural resources)</li> <li>• Gunnison River SRMA and Escalante Canyon SRMA (for protection of public health and safety, to minimize conflicts with interspersed private landowners, and due to incompatibility between recreational target shooting and the BLM's recreation outcome and setting objectives for this area).</li> <li>• Cactus Park SRMA, Ninemile Hill SRMA, East Creek SRMA, and Sawmill Mesa SRMA (for protection of public health and safety, and</li> </ul>	<p>Close the following areas (totaling 9,995 acres) to recreational target shooting, which includes discharge of firearms, pellet/BB guns, air soft guns, and archery (Map 2-7p):</p> <ul style="list-style-type: none"> <li>• Dominguez Canyon Wilderness Zone 1 (for public health and safety concerns associated with recreational target shooting in a confined canyon with high levels of recreational visitation, and for protection of vulnerable cultural resources and scenic geological features)</li> <li>• Gunnison River SRMA (for public health and safety concerns associated with recreational target shooting in a confined canyon with high levels of recreational visitation and interspersed private lands with residences, and for protection of vulnerable scenic geological features).</li> <li>• Escalante Canyon SRMA (for public</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
			<p>and the BLM's recreation outcome and setting objectives for this area, and for protection of wildlife from disruptive impacts).</p> <p>In areas not subject to area closure, firearms must be discharged toward a proper backstop sufficient to stop the projectiles forward progress beyond the intended target. Targets must be constructed of wood, cardboard, paper or similar non-breakable materials. All targets, clays, and shells are considered litter after use and must be removed and disposed of properly.</p>	<p>due to incompatibility between recreational target shooting and the BLM's recreation outcome and setting objectives for this area).</p> <ul style="list-style-type: none"> <li>Hunting Ground SRMA, Gunnison Slopes SRMA and Cottonwood Canyon SRMA (due to incompatibility between recreational target shooting and the BLM's recreation outcome and setting objectives for this area)</li> </ul> <p>In areas not subject to area closure, firearms must be discharged toward a proper backstop sufficient to stop the projectiles forward progress beyond the intended target. Targets must be constructed of wood, cardboard, paper or similar non-breakable materials. All targets, clays, and shells are considered litter after use and must be removed and disposed of properly.</p>	<p>health and safety concerns associated with recreational target shooting in a confined canyon with high levels of recreational visitation and interspersed private lands with residences, for protection of vulnerable cultural resources and scenic geological features, and due to conflict between recreational target shooting and management of this area as an education emphasis/watchable wildlife area)</p> <ul style="list-style-type: none"> <li>East Creek ERMA (for public health and safety concerns associated with recreational target shooting in a confined canyon with highway traffic, high levels of recreational visitation and interspersed private lands with residences, and for protection of vulnerable scenic geological features)</li> </ul> <p>If monitoring reveals that recreational target shooting is preventing achievement of the objectives identified in this RMP for the purposes of the D-E NCA, as identified in the Omnibus Act of 2009 (e.g., recreation, wilderness,</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					<p>natural resources), then the BLM may consider closure or restriction of affected areas to recreational target shooting.</p> <p>If monitoring reveals that recreational target shooting is causing or is likely to cause impacts to public health and safety, or is causing damage to nearby private property, the BLM may consider closure or restriction of affected areas to recreational target shooting. Any closure of an area to recreational target shooting would require an RMP amendment.</p> <p>Any subsequent closure or restriction of target shooting based on these criteria must be implemented in accordance with the regulations and procedures detailed in 43 CFR 8364.1, Closure and Restriction Orders.</p> <p>In areas not subject to area closure, firearms must be discharged toward a proper backstop sufficient to stop the projectiles forward progress beyond the intended target. Targets must be constructed of wood, cardboard, paper or similar non-breakable materials. All targets, clays,</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					and shells are considered litter after use and must be removed and disposed of properly.
347	<i>Hunting Ground Recreation Management Area</i>				
348	<p><b>Objective:</b> No similar objective in existing RMPs.</p>	<p><b>Objective:</b> Focus recreation and visitor services on protecting and facilitating visitor opportunities to participate in motorized and non-motorized trail-based activities and dispersed camping.</p> <p>The RMA will provide a recreation setting commensurate with other uses that 1) retains a low level of contrast between developments and the natural surrounding; 2) provides the necessary recreation facilities (trails, trailheads, campsites) to facilitate activity participation; 3) provides basic on-site visitor services (signage, maps, etc.); and 4) clearly posts conditions of use throughout the area.</p>	<p><b>Objective:</b> No similar objective</p>	<p><b>Objective:</b> Manage the recreation area targeting heritage tourists and tourism service providers that seek the recreational outcomes described below. Target the following activities: auto touring, hiking, horseback riding, and mountain bicycling.</p>	<p><b>Objective:</b> Focus recreation and visitor services on protecting and facilitating visitor opportunities to participate in motorized and non-motorized trail-based activities and dispersed camping.</p> <p>The RMA will provide a recreation setting commensurate with other uses that 1) retains a low level of contrast between developments and the natural surrounding; 2) provides the necessary recreation facilities (trails, trailheads, campsites) to facilitate activity participation; 3) provides basic on-site visitor services (signage, maps, etc.); and 4) clearly posts conditions of use throughout the area.</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
349	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> No similar objective	<b>Objective:</b> No similar objective	<p><b>Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, participants in visitor/community assessments report an average 4.0 realization of the following targeted experience and benefit outcomes. (4.0 on a probability scale where: 1 = Not at all realized to 5 = totally realized).</p> <ol style="list-style-type: none"> <li>1. Learning more about the area, connecting with the experiences of those who traveled through the area in the past, enjoying frequent access to community-based recreation feature</li> <li>2. Increased appreciation of the area's cultural history, living a more outdoor-oriented lifestyle</li> <li>3. Sustainability of the community's cultural heritage, maintenance/preservation of distinctive community atmosphere, improved local recreation-tourism economy</li> <li>4. Greater support for protection of cultural and heritage resources, increased awareness and</li> </ol>	<b>Objective:</b> No similar objective

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				protection of recreation resources	
350	No similar action in existing RMPs.	Designate the Hunting Ground as an ERMA (23,131 acres, Map 2–8b).	No similar action.	Designate the Hunting Ground as a SRMA (23,131 acres, Map 2–8d).	Designate the Hunting Ground as an ERMA (23,131 acres, Map 2–8p).
350a	No similar action in existing RMPs.	No management action for recreation settings.	Same as B.	<p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p> <p><i>Remoteness:</i> Make the RMA more remote by closing and restoring routes</p> <p><i>Naturalness:</i> Maintain the undeveloped nature of the RMA; restrict development that does not directly support the historic trail setting</p> <p><i>Facilities:</i> At trailheads, develop parking and toilets; Along the trail between access points, limit development to interpretive displays with historic trail information; Develop a connective trail for retracement purposes.</p> <p><b>Social Settings:</b></p> <p><i>Average Contacts:</i> Based on contacts away from trailheads</p>	No similar management action for recreation settings.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				<p>(exact number based on monitoring of outcomes)</p> <p><i>Average Group Size:</i> Same as Average Contacts</p> <p><i>Evidence of Use:</i> Sounds of people rare or infrequent</p> <p><b>Operational Setting:</b></p> <p><i>Access:</i> All use is non-motorized</p> <p><i>Management Controls:</i> Conditions of use restrictions necessary to support retracement experience</p> <p><i>Visitor Services:</i> On-site interpretation including kiosks and maps with words and pictures; occasional BLM personnel presence.</p>	
351	No similar action in existing RMPs.	Connect/reroute routes to make loop opportunities as necessary; reroute/repair unsustainable and eroding routes	No similar action.	Close and rehab existing routes to reduce route density.	Connect/reroute routes to make loop opportunities as necessary; reroute/repair unsustainable and eroding routes; designate BLM routes to meet RMA objectives.
352	No similar action in existing RMPs.	With partners (e.g., local governments, trail organizations, user groups, service providers, tourism councils, etc.), design and construct a mixed-use connective trail between Whitewater and Delta.	No similar action.	With partners (e.g., local governments, trail organizations, user groups, service providers, tourism councils, etc.), design and construct a non—motorized connective trail between Whitewater and Delta.	With partners (e.g., local governments, trail organizations, user groups, service providers, and tourism councils), design and construct a mixed-use connective trail between Whitewater and Delta.



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
353	No similar action in existing RMPs.	Implement a three-day camping limit within the RMA, unless otherwise authorized.	No similar action.	Implement a seven-day camping limit within the RMA, unless otherwise authorized.	Implement a seven-day camping limit within the RMA, unless otherwise authorized.
354	No similar action in existing RMPs.	Manage the RMA as VRM Class II to meet recreational setting objectives.	No similar action.	Manage the RMA as VRM Class I to meet recreational setting objectives (exception: allow landscape changes to meet recreation objectives)	Manage the RMA as VRM Class II to meet recreational setting objectives.
355	No similar action in existing RMPs.	No similar action.	No similar action.	Provide cultural/historic education/interpretation to help promote learning about the past.	See Educational Use section (row 498) for learning outcomes.
356	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue vending SRPs only in conjunction with competitive SRPs	No similar action.	Do not issue vending SRPs	Issue vending SRPs only in conjunction with competitive SRPs
357	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue non-motorized competitive SRPs that are consistent with RMA objectives	No similar action. Permit applications are assessed on a case-by-case basis.	Do not issue competitive SRPs.	Issue non-motorized competitive SRPs that are consistent with RMA objectives.
358	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low, medium, and moderate impact (Class I, II and III in Appendix I) Competitive SRPs that are consistent with RMA objectives.	No similar action. Permit applications are assessed on a case-by-case basis.	No similar action. Do not issue Competitive SRPs.	: Only issue low, medium, and moderate impact (Class I, II and III in Appendix I) Competitive SRPs that are consistent with RMA objectives. See River Rims ACEC (row 595) for area-specific restrictions.
359	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low, medium and moderate impact (Class I, II and III in Appendix I) Organized Group SRPs that are consistent with RMA objectives.	No similar action. Permit applications are assessed on a case-by-case basis.	Issue low impact (Class I in Appendix I) Organized Group SRPs that are consistent with RMA objectives.	Only issue low and medium impact (Class I and II in Appendix I) Organized Group SRPs that are consistent with RMA objectives. See River Rims ACEC (row 595) for area-specific restrictions.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
360	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low, medium and moderate impact (Class I, II and III in Appendix I) Commercial SRPs that are consistent with RMA objectives	No similar action. Permit applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives	Only issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives See River Rims ACEC (row 595) for area-specific restrictions.
361	<b>Gunnison River Recreation Management Area</b>				
362	<b>Objective:</b> Manage the Gunnison River corridor to protect semi-primitive non-motorized recreational opportunities (BLM 1987).	<b>Objective:</b> Focus recreation and visitor services management on protecting and facilitating visitor opportunities to participate in canoeing, rafting, kayaking, hiking and horseback riding.  The ERMA will provide a recreation setting commensurate with other uses that 1) retains a low level of contrast between developments and the natural surrounding; 2) provides the necessary recreation facilities (boat launches, trails, trailheads) to facilitate activity participation; 3) provides basic on-site visitor services (signage, maps, etc.); and 4) clearly posts conditions of use throughout the area.	<b>Objective:</b> Manage the recreation area targeting non-motorized river boaters that seek the recreational outcomes described below. Target the following activities: canoeing, kayaking, rafting, camping activities.  See Appendix L for details on recreation settings in this recreation area.	<b>Objective:</b> Manage the recreation area targeting non-motorized float boaters that seek the recreational outcomes described below. Target the following activities: non-motorized float boating and camping.	

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
363	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> No similar objective	<b>Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, participants in visitor/community assessments report an average 4.0 realization of the following targeted experience and benefit outcomes: (4.0 on a probability scale where: 1 = Not at all realized to 5 = totally realized).  1. Enjoying solitude, experiencing natural surroundings  2. Greater appreciation of how wildlife and natural settings improve my life, restored mental and physical well-being  3. Greater community ownership and stewardship of natural resources  4. Increased awareness and protection of wildlife and other natural and cultural resources	<b>Objective (Both zones):</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, participants in visitor/community assessments report an average 4.0 realization of the following targeted experience and benefit outcomes: (4.0 on a probability scale where: 1 = Not at all realized to 5 = totally realized).  1. Enjoying group affiliation and togetherness, experiencing natural surroundings, being with others that enjoy the same things I do  2. Developing stronger ties with family and/or friends  3. Greater community ownership and stewardship of recreation resources  4. Increased awareness and protection of recreation resources	<b>Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, the majority of participants in visitor/community assessments report realization of the following targeted experience and benefit outcomes:  1. Enjoying group affiliation and togetherness, experiencing natural surroundings, being with others that enjoy the same things I do  2. Developing stronger ties with family and/or friends  3. Greater community ownership and stewardship of recreation resources  4. Increased awareness and protection of recreation resources
364	No similar action in existing RMPs.	Designate the Gunnison River corridor as an ERMA (3,746 acres, Map 2–8b).	Designate the Gunnison River corridor as a SRMA (3,746 acres, Maps 2–8c, 2–8d and 2–8p).		Designate the Gunnison River corridor as a SRMA (3,746 acres, Map 2–8p).

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
364a	No similar action in existing RMPs.	No similar management action for recreation settings	<p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p> <p><i>Naturalness:</i> Maintain the existing undeveloped nature of the BLM lands</p> <p><i>Facilities:</i> At primary access points develop boat launch, parking, and toilet facilities; Along the river between access points maintain primitive campsites with little or no development</p> <p><b>Social Settings:</b></p> <p><i>Average Contacts:</i> On the river, participants encounter a season average of up to 5 encounters per day.</p> <p><i>Average Group Size:</i> On the river, participants encounter a seasonal average of up to 15 people per group</p> <p><i>Evidence of Use:</i> Sounds of people rare or infrequent</p> <p><b>Operational Setting:</b></p>	<p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p> <p><i>Facilities:</i> Same as Alternative C</p> <p><b>Social Settings:</b></p> <p><i>Average Contacts:</i> On the river, participants encounter a season average of up to 10 encounters per day.</p> <p><i>Average Group Size:</i> On the river, participants encounter a season average of up to 25 people per group</p> <p><i>Evidence of Use:</i> Sounds of people occasional</p> <p><b>Operational Setting:</b> Same as C.</p>	<p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p> <p><i>Facilities:</i> At primary access points develop boat launch, parking, and toilet facilities; Along the river between access points maintain primitive campsites with little or no development.</p> <p><b>Social Settings:</b></p> <p><i>Average Contacts:</i> On the river, participants encounter a season average of up to 10 encounters per day.</p> <p><i>Average Group Size:</i> On the river, participants encounter a season average of up to 25 people per group</p> <p><i>Evidence of Use:</i> Sounds of people occasional</p> <p><b>Operational Setting:</b></p> <p><i>Access:</i> BLM river access points are all</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
			<p><i>Access:</i> River use is predominantly non-motorized</p> <p><i>Management Controls:</i> Permit system used to regulate conditions of use and achieve social settings</p> <p><i>Visitor Services:</i> On-site information including kiosks and maps with words and pictures; regular BLM personnel presence.</p>		<p>non—motorized during the boating season.</p> <p><i>Management Controls:</i> Permit system used to regulate conditions of use and achieve social settings</p> <p><i>Visitor Services:</i> On-site information including kiosks and maps with words and pictures; regular BLM personnel presence</p>
365	No similar action in existing RMPs.	Limit group size on the river to 25 heartbeats (including guides and dogs)	Limit group size on the river to 25 (not including guides and dogs)		Limit group size on the river to 25 (including guides and dogs)
366	No similar action in existing RMPs.	No similar action.	All non-working dogs must be on leash in defined high use areas (currently boat ramps and mouth of Dominguez Canyon)		All non-working dogs must be on leash in defined high use areas (currently boat ramps and mouth of Dominguez Canyon)
367	No similar action in existing RMPs.	Close the river to motorized recreation use.	Close the river to motorized recreation use from May 1 through October 1.		Close BLM boat ramps and campsites to motorized boat use from May 1 through Labor Day weekend.
368	No similar action in existing RMPs.	Close the mouth of Dominguez Canyon to overnight camping. Limit the rest of the RMA to designated, undeveloped campsites (outside of developed campgrounds).	Limit overnight camping to designated campsites (outside of developed campgrounds).		Limit overnight camping to designated campsites (outside of developed campgrounds).
369	No similar action	No similar action.	Close the mouth of Dominguez Canyon to non-boating overnight camping from May 1 to October 1		Close the mouth of Dominguez Canyon to non-boating overnight camping from May 1 through Labor Day weekend.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
370	No similar action in existing RMPs.	Do not develop a reservation system for campsites.	Develop and implement a reservation system for designated campsites from Memorial Day through Labor Day.	Develop and implement a reservation system from Memorial Day through Labor Day for designated campsites when monitoring indicates 75% of the designated campsites are occupied 50% of Friday and Saturday nights from Memorial Day through Labor Day.	Develop and implement a reservation system for designated campsites from Memorial Day weekend through Labor Day weekend.
371	No similar action in existing RMPs.	No similar action.	Restrict commercial groups camping at the mouth of Dominguez Canyon on any given night to no greater than 50% of the designated campsites.		Manage the campsite allocation at the mouth of Dominguez Canyon to generally achieve a 50/50 split between commercial and private groups.
372	No similar action in existing RMPs.	No similar action.	Develop and implement an allocation system for commercial groups camping at the mouth of Dominguez Canyon that is based on an annual lottery system.	Develop and implement an allocation system for commercial groups camping at the mouth of Dominguez Canyon that is based on historic use over the past five years.	Develop and implement an allocation system for commercial groups camping at the mouth of Dominguez Canyon that is based on historic use over the past five years.
373	No similar action in existing RMPs.	No similar action.	Implement a special area special recreation permit requirement for all overnight private boaters (for the purpose of monitoring and to achieve RMA objectives). A fee for these SRPs will be considered and if proposed will go through Recreation Enhancement Act Process.		Implement a Special Area SRP requirement for all overnight private boaters (for the purpose of monitoring and to achieve RMA objectives).
374	No similar action in existing RMPs.	Implement a three-day camping limit within the RMA, unless otherwise authorized.	Implement a seven-day camping limit within the RMA, unless otherwise authorized.	No similar action.	Implement a seven-day camping limit within the RMA, unless otherwise authorized.
375	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Do not issue Vending SRPs (shuttle services and rentals are considered commercial not vending)		Issue Vending SRPs only in conjunction with Competitive SRPs.	Issue vending SRPs only in conjunction with commercial permits
376	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Do not issue Competitive SRPs		Issue non-motorized Competitive SRPs that are consistent with RMA objectives.	Do not issue Competitive SRPs

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
377	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	No similar action. Do not issue Competitive SRPs.	No similar action. Do not issue Competitive SRPs.	Issue low, medium and moderate impact (Class III in Appendix I) Competitive SRPs that are consistent with RMA objectives	No similar action. Do not issue Competitive SRPs.
378	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives.		Issue low, medium and moderate impact (Class I, II, and III in Appendix I) Commercial SRPs that are consistent with RMA objectives.	Only issue low and medium impact (Class I and II in Appendix I) commercial SRPs that are consistent with RMA objectives.
379	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Organized Group SRPs that are consistent with RMA objectives.		Issue low, medium and moderate impact (Class I, II, and III in Appendix I) Organized Group SRPs that are consistent with RMA objectives.	Only issue low and medium impact (Class I and II in Appendix I) organized group SRPs that are consistent with RMA objectives.
380	<b><i>Ninemile Hill Recreation Management Area</i></b>				
381	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> See Cactus Park RMA for this alternative	<b>Objective:</b> See Cactus Park RMA for this alternative	<p><b>Objective:</b> Manage the recreation areas targeting motorized trail riders that seek the recreational outcomes described below. Target the following activities: motorcycle riding (trail riding and trials riding).</p> <p>See Appendix L for details on recreation settings in this recreation area.</p>	<p><b>Objective:</b> Focus recreation and visitor services management on protecting and facilitating visitor opportunities to participate in equestrian and hiking trail activities and dispersed camping.</p> <p>The Ninemile Hill RMA will provide a recreation setting commensurate with other uses that 1) retains a low level of contrast between developments and the natural surrounding; 2) provides the necessary recreation facilities (trails, trailheads, campsites) to facilitate activity participation; 3) provides basic on-site visitor services (signage, maps, etc.); and 4) clearly posts</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					conditions of use throughout the area.
382	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> See Cactus Park RMA for this alternative	<b>Objective:</b> See Cactus Park RMA for this alternative	<b>Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, participants in visitor/community assessments report an average 4.0 realization of the following targeted experience and benefit outcomes. (4.0 on a probability scale where: 1 = Not at all realized to 5 = totally realized). <ol style="list-style-type: none"> <li>1. Enjoying group affiliation and togetherness, experiencing natural surroundings, developing skills and abilities, enjoying risk-taking adventure</li> <li>2. Developing stronger ties with family and/or friends, living a more outdoor-oriented lifestyle</li> <li>3. Greater community ownership and stewardship of recreation resources, increased desirability as place to live or retire</li> <li>4. Increased awareness and protection of recreation resources</li> </ol>	<b>Objective:</b> No similar objective



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				5. Increased stewardship and awareness of the D-E NCA's sensitive natural, historic, traditional and cultural resources	
383	No similar action in existing RMPs.	No similar action, see Cactus Park RMA for this alternative	No similar action; see Cactus Park RMA for this alternative	Designate Ninemile Hill as a SRMA (6,064 acres, Map 2-8d).	Designate Ninemile Hill as an ERMA (10,440 acres, Map 2-8p).
383a	No similar action in existing RMPs.	No similar management action for recreation settings.	No similar action; see Cactus Park RMA for this alternative.	<p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p> <p><i>Naturalness:</i> Maintain the undeveloped nature of the RMA</p> <p><i>Facilities:</i> At trailheads, develop parking and toilet facilities; Develop the necessary trailheads and trail system to meet RMA objectives</p> <p><b>Social Setting:</b></p> <p><i>Evidence of Use:</i> Sounds of people frequent</p> <p><b>Operational Setting:</b></p> <p><i>Access:</i> Motorized—motor-cycles, all-terrain vehicles</p>	No similar management action for recreation settings.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				(ATVs)—and high clearance four-wheel-drive (4x4) vehicles  <i>Management Controls:</i> Clearly post necessary rules to support RMA objectives  <i>Visitor Services:</i> On-site information including kiosks and maps with words and pictures; regular BLM personnel presence.	
384	No similar action in existing RMPs.	No similar action; see Cactus Park RMA for this alternative	No similar action; see Cactus Park RMA for this alternative.	Close redundant routes to reduce confusion by users.	No similar action.
385	No similar action in existing RMPs.	No similar action, see Cactus Park RMA for this alternative	No similar action, see Cactus Park RMA for this alternative	Close the RMA to overnight camping.	Limit vehicle camping to designated, undeveloped vehicle campsites (outside of developed campgrounds). Dispersed horse and foot camping is allowed outside designated sites if at a distance greater than 200 meters off motorized routes.
386	No similar action in existing RMPs.	No similar action, see Cactus Park RMA for this alternative	No similar action, see Cactus Park RMA for this alternative	No similar action.	Implement a seven-day camping limit within the RMA, unless otherwise authorized.
387	No similar action in existing RMPs.	No similar action, see Cactus Park RMA for this alternative	No similar action, see Cactus Park RMA for this alternative	Designate BLM routes to meet RMA objectives where not in conflict with cultural, biological or other natural resources.	Designate BLM routes to meet RMA objectives.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
388	No similar action in existing RMPs.	No similar action, see Cactus Park RMA for this alternative	No similar action, see Cactus Park RMA for this alternative	With partners (e.g., user groups, retail shops, service providers) develop a motorized loop trail system consistent with RMA objectives (use current BMPs for trail construction and maintenance, e.g., Wernex 1994 and Webber 2007) (both RMAs). During implementation, as new routes are constructed, existing routes would be closed and rehabbed.	Develop a quality foot and horse trail system that incorporates existing routes, while ensuring connectivity of the Tabeguache Trail through the Ninemile Hill RMA to Cactus Park for all motorized and non-motorized uses. In order to protect bighorn sheep production areas, limit construction of new trails to the area above the rim of the Gunnison Slopes.
389	No similar action in existing RMPs.	No similar action, see Cactus Park RMA for this alternative	No similar action, see Cactus Park RMA for this alternative	Issue Vending SRPs only in conjunction with competitive SRPs	Do not issue vending permits.
391	No similar action in existing RMPs.	No similar action, see Cactus Park RMA for this alternative.	No similar action, see Cactus Park RMA for this alternative.	Issue non-speed competitive SRPs for motorcycle events.	Issue non-motorized Competitive SRPs.
392	No similar action in existing RMPs. Permits are assessed on a case-by-case basis.	No similar action, see Cactus Park RMA for this alternative.	No similar action, see Cactus Park RMA for this alternative.	Issue low, medium, and moderate (Class I, II, and III in Appendix I) competitive SRPs consistent with RMA objectives.	Only issue low, medium, and moderate (Class I, II, and III in Appendix I) competitive SRPs consistent with RMA objectives.
393	No similar action in existing RMPs. Permits are assessed on a case-by-case basis.	No similar action, see Cactus Park RMA for this alternative	No similar action, see Cactus Park RMA for this alternative	Issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives.	Only issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives.
394	No similar action in existing RMPs. Permits are assessed on a case-by-case basis.	No similar action, see Cactus Park RMA for this alternative	No similar action, see Cactus Park RMA for this alternative	Issue low, medium and moderate impact (Class I, II, and III in Appendix I) Organized Group SRPs that are consistent with RMA objectives.	Only issue low, medium and moderate impact (Class I, II, and III in Appendix I) Organized Group SRPs that are consistent with RMA objectives.
395	<b>Cactus Park Recreation Management Area</b>				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
396	<b>Objective:</b> Manage Cactus Park as a group-use area.	<p><b>Objective:</b> Focus recreation and visitor services management on protecting and facilitating visitor opportunities to participate in motorized trail riding activities (ATV and motorcycle riding) and dispersed camping.</p> <p>The ERMA will provide a recreation setting commensurate with other uses that 1) retains a low level of contrast between developments and the natural surrounding; 2) provides the necessary recreation facilities (trails, trailheads, campsites) to facilitate activity participation; 3) provides basic on-site visitor services (signage, maps, etc.); and 4) clearly posts conditions of use throughout the area.</p>	<p><b>Objective:</b> Manage the recreation area targeting visitors that seek the recreational outcomes described below. Target the following activities: hiking, horseback riding, camping and back road touring.</p> <p>See Appendix L for details on recreation settings in this recreation area.</p>	<b>Objective:</b> Manage the recreation area targeting motorized trail riders that seek the recreational outcomes described below. Target the following activities: ATV riding, and camping activities.	<b>Objective:</b> Manage the recreation area targeting motorized trail riders that seek the recreational outcomes described below. Target the following activities: ATV and motorcycle trail riding, and associated camping activities.
397	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> No similar objective	<b>Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, participants in visitor/community assessments report an average 4.0 realization of the following targeted experience and benefit outcomes. (4.0 on a probability scale where: 1 = Not at all realized to 5 = totally realized).	<b>Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, participants in visitor/community assessments report an average 4.0 realization of the following targeted experience and benefit outcomes. (4.0 on a probability scale where: 1 = Not at all realized to 5 = totally realized).	<p><b>Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, the majority of participants in visitor/community assessments report realization of the following targeted experience and benefit outcomes:</p> <ol style="list-style-type: none"> <li>1. Enjoying group affiliation and</li> </ol>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
			<ol style="list-style-type: none"> <li>1. Learning about the purposes of the D-E NCA and the D-E NCA's resources</li> <li>2. Experiencing natural settings and undeveloped landscapes</li> <li>3. Enjoying recreation outings that protect and enhance biological and cultural resources</li> <li>4. Improved understanding of D-E NCA purposes and resources</li> <li>5. Greater appreciation for and stewardship of the biological and cultural resources in the D-E NCA</li> <li>6. Greater appreciation of the historical interaction of human activities with the D-E NCA's landscape</li> <li>7. Increased attraction of local communities as a place to live and/or retire</li> </ol>	<ol style="list-style-type: none"> <li>1. Enjoying group affiliation and togetherness, experiencing natural surroundings, enjoying frequent access to outdoor recreation activities</li> <li>2. Developing stronger ties with family and/or friends, living a more outdoor-oriented lifestyle</li> <li>3. Greater community ownership and stewardship of recreation resources, increased desirability as place to live or retire</li> <li>4. Increased awareness and protection of recreation resources</li> <li>5. Increased stewardship and awareness of the D-E NCA's sensitive natural, historic, traditional and cultural resources</li> </ol>	<p>togetherness, experiencing natural surroundings, enjoying frequent access to outdoor recreation activities, youth learning outdoor recreation skills, practicing sustainable outdoor recreation skills.</p> <ol style="list-style-type: none"> <li>2. Developing stronger ties with family, living a more outdoor-oriented lifestyle</li> <li>3. Greater community ownership and stewardship of recreation resources, increased desirability as place to live or retire</li> <li>4. Increased awareness and protection of recreation resources</li> </ol>
398	No similar action in existing RMPs.	Designate Cactus Park as an ERMA (34,973 acres, Map 2-8b).	Designate Cactus Park as a SRMA (34,973 acres, Map 2-8c).	Designate Cactus Park as a SRMA (26,873 acres, Map 2-8d).	Designate Cactus Park as a SRMA (27,406 acres, Map 2-8p).

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
398a	No similar action in existing RMPs.	No similar management action for recreation settings.	<p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p> <p><i>Remoteness:</i> Make the RMA more remote by closing and restoring routes</p> <p><i>Naturalness:</i> Maintain the undeveloped nature of the RMA</p> <p><i>Facilities:</i> Construct the minimum necessary to provide on-site information, education, interpretation</p> <p><b>Social Settings:</b></p> <p><i>Average Contacts:</i> Restrict the number of groups to achieve biological and cultural resource objectives</p> <p><i>Average Group Size:</i> Restrict group size to achieve biological and cultural resource objectives</p> <p><i>Evidence of Use:</i> Sounds of people rare or infrequent</p> <p><b>Operational Setting:</b></p>	<p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p> <p><i>Naturalness:</i> Maintain the undeveloped nature of the RMA</p> <p><i>Facilities:</i> At trailheads, develop parking and toilet facilities; Develop the necessary trailheads and trail system to meet RMA objectives (develop the necessary camping facilities to meet RMA objectives)</p> <p><b>Social Setting:</b></p> <p><i>Evidence of Use:</i> Sounds of people frequent</p> <p><b>Operational Setting:</b></p> <p><i>Access:</i> Motorized (motorcycles, ATVs, and high-clearance 4x4 vehicles)</p> <p><i>Management Controls:</i> Clearly post necessary rules to support RMA objectives</p> <p><i>Visitor Services:</i> On-site information including kiosks</p>	<p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p> <p><i>Naturalness:</i> Maintain the undeveloped nature of the RMA</p> <p><i>Facilities:</i> At trailheads, develop parking and toilet facilities; Develop the necessary trailheads, trails, and camping facilities to meet RMA objectives</p> <p><b>Social Setting:</b></p> <p><i>Average Contacts:</i> Away from parking areas, participants encounter a season average of 8 groups per day</p> <p><i>Average Group Size:</i> Away from parking areas, participants encounter a seasonal average of 25 people per group</p> <p><i>Evidence of Use:</i> Sounds of people frequent</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
			<p><i>Access:</i> Make the RMA more remote by restricting the number of routes motorized and mechanized can use</p> <p><i>Management Controls:</i> Basic conditions of use posted at key access points; consider permits for individual use if needed to protect biological and cultural resources</p> <p><i>Visitor Services:</i> On-site information, interpretation, and education would be available at kiosks and through structured outdoor education provided by BLM staff or partners; off-site information, interpretation, and education would be available through web-based resources and brochures.</p>	and maps with words and pictures; regular BLM personnel presence.	<p><b>Operational Setting:</b></p> <p><i>Access:</i> Motorized (ATVs, motorcycles and high-clearance 4x4s)</p> <p><i>Management Controls:</i> Clearly post necessary rules to support RMA objectives</p> <p><i>Visitor Services:</i> On-site information including kiosks and maps with words and pictures; regular BLM personnel presence.</p>
399	No similar action in existing RMPs.	Close redundant routes to reduce confusion by users.	Close routes to protect and enhance biological and cultural resources	Same as Alternative B.	Close routes as needed to meet cultural, biological or other natural resource objectives.
400	No similar action in existing RMPs.	No similar action.	Designate dispersed, undeveloped camp sites.		Designate dispersed, undeveloped sites.
401	No similar action in existing RMPs.	No similar action.	Limit overnight camping to designated, undeveloped campsites (outside of developed campgrounds).	Limit overnight camping to designated campsites (outside of developed campgrounds).	Limit overnight camping to designated, undeveloped campsites (outside of developed campgrounds).

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
402	No similar action in existing RMPs.	Designate BLM routes to maintain access and opportunity for motorized and mechanized recreation where not in conflict with cultural, biological or other natural resources.	No similar action.	Designate BLM routes to meet RMA objectives where not in conflict with cultural, biological or other natural resources.	Designate BLM routes to meet RMA objectives.
403	No similar action in existing RMPs.	Connect/reroute routes to make loop opportunities as necessary; close unsustainable and eroding routes.	No similar action.	With partners (e.g., user groups, retail shops, service providers) develop a motorized loop trail system consistent with RMA objectives (use current BMPs for trail construction and maintenance, e.g., Wernex 1994 and Webber 2007). During implementation, as new routes are constructed, existing routes would be closed and rehabbed.	With partners (e.g., user groups, retail shops, and service providers), develop a motorized loop trail system consistent with RMA objectives (use current BMPs for trail construction and maintenance; e.g., see Wernex 1994 and Webber 2007). During implementation, as new routes are constructed, existing routes would be closed and rehabbed. Prohibit the construction of new motorized or mechanized routes in desert bighorn sheep production areas (see Map 3–11).
404	No similar action in existing RMPs.	Allow for seasonal motorized vehicle use on closed routes to facilitate game retrieval during hunting season.	No similar action.	No similar action.	No similar action.
405	No similar action in existing RMPs.	Implement a seven-day camping limit within the RMA, unless otherwise authorized.	From April 1 to August 31, implement a seven-day camping limit within the RMA, unless otherwise authorized.	Implement a 14-day camping limit within the RMA, unless otherwise authorized.	From April 1 through Labor Day weekend, implement a seven-day camping limit within the RMA, unless otherwise authorized.



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
406	No similar action in existing RMPs.	No similar action.	No similar action.	Construct developed campground(s) as necessary to minimize impacts to biological and cultural resources and to meet RMA objectives.	Construct developed campground(s) as necessary to minimize impacts to biological and cultural resources and to meet RMA objectives.
407	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Do not issue Vending SRPs.		Do not issue vending permits.	Issue Vending SRPs only in conjunction with Organized Group or Competitive SRPs
408	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Do not issue Competitive SRPs.		Issue Competitive SRPs that are consistent with RMA objectives.	Issue Competitive SRPs that are consistent with RMA objectives.
409	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	No similar action. Do not issue Competitive SRPs.	No similar action. Do not issue Competitive SRPs.	Issue low and medium impact (Class I and II in Appendix I) Competitive SRPs.	Only issue low and medium impact (Class I and II in Appendix I) Competitive SRPs.
410	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives.			Only issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives.
411	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Organized Group SRPs that are consistent with RMA objectives.		Issue low, medium and moderate impact (Class I, II, and III in Appendix I) Organized Group SRPs that are consistent with RMA objectives.	Only issue low, medium and moderate impact (Class I, II, and III in Appendix I) organized group SRPs that are consistent with RMA objectives.
412	Gunnison Slopes Recreation Management Area				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
413	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> No similar objective	<b>Objective:</b> No similar objective	<p><b>Objective:</b> Manage the recreation area targeting non-motorized, non-mechanized, quiet trail users who seek the outcomes described below. Target the following activities: hiking and horseback riding.</p> <p>See Appendix L for details on recreation settings in this recreation area.</p>	<b>Objective:</b> See Ninemile Hill RMA for this alternative.
414	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> No similar objective	<b>Objective:</b> No similar objective	<p><b>Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, participants in visitor/community assessments report an average 4.0 realization of the following targeted experience and benefit outcomes. (4.0 on a probability scale where: 1 = Not at all realized to 5 = totally realized).</p> <ol style="list-style-type: none"> <li>1. Enjoying the area's wildlife, scenery, and views, experiencing the natural surroundings, enjoying solitude</li> <li>2. Greater freedom from urban living</li> <li>3. Closer relationship with the natural world</li> <li>4. Greater protection of wildlife and plant habitat from growth and development</li> </ol>	<b>Objective:</b> No similar objective.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				<p>5. Maintenance/preservation of distinctive public land recreation setting character</p> <p><b>Objective:</b> No similar objective</p>	
415	No similar action in existing RMPs.	No similar action.	No similar action.	<p>Designate the Gunnison Slopes as a SRMA (5,225 acres, Map 2–8d).</p> <p>No similar action, see Ninemile Hill RMA for this alternative</p>	No similar action; see Ninemile Hill RMA for this alternative.
415a	No similar action in existing RMPs.	No similar management action for recreation settings.	Same as B.	<p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p> <p><i>Remoteness:</i> Maintain the roadless nature of the RMA</p> <p><i>Naturalness:</i> Maintain the undeveloped nature of the RMA</p> <p><i>Facilities:</i> Designate primitive parking areas along the edge of the RMA</p> <p><b>Social Settings:</b></p>	No similar action, see Ninemile Hill RMA for this alternative.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				<p><i>Average Contacts:</i> Away from parking areas, participants encounter a season average of 10 groups per day</p> <p><i>Average Group Size:</i> Away from parking areas, participants encounter a seasonal average of 8 people per group</p> <p><i>Evidence of Use:</i> Sounds of people rare or infrequent</p> <p><b>Operational Setting:</b></p> <p><i>Access:</i> non-motorized/non-mechanized</p> <p><i>Management Controls:</i> Basic conditions of use posted at key access points</p> <p><i>Visitor Services:</i> No on-site information; infrequent BLM personnel presence.</p>	
416	No similar action in existing RMPs.	No similar action.	No similar action.	Construct the minimal miles of single-track trail for hiking and equestrian use necessary to meet RMA objectives and provide targeted users access into the area.	No similar action. See Ninemile Hill RMA for this alternative.
417	No similar action in existing RMPs.	Manage area as VRM I	Manage as VRM II	Manage the RMA as VRM I to meet recreational setting objectives (exception: allow landscape changes to meet RMA objectives).	No similar action. See Ninemile Hill RMA for this alternative.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
418	No similar action in existing RMPs.	No similar action.	No similar action.	To achieve RMA objectives, apply SSR to surface-disturbing activities.  No similar action, see Ninemile Hill RMA for this alternative	No similar action. See Ninemile Hill RMA for this alternative.
419	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	No similar action.	No similar action.	Do not issue Vending SRPs  No similar action, see Ninemile Hill RMA for this alternative	No similar action. See Ninemile Hill RMA for this alternative.
420	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	No similar action.	No similar action.	Do not issue competitive SRPs  No similar action, see Ninemile Hill RMA for this alternative	No similar action. See Ninemile Hill RMA for this alternative.
421	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	No similar action. Permits applications are assessed on a case-by-case basis.	No similar action. Permits applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives.  No similar action, see Ninemile Hill RMA for this alternative	No similar action. See Ninemile Hill RMA for this alternative.
422	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	No similar action. Permits applications are assessed on a case-by-case basis.	No similar action. Permits applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Organized Group SRPs that are consistent with RMA objectives.  No similar action, see Ninemile Hill RMA for this alternative	No similar action. See Ninemile Hill RMA for this alternative.
423	<b>East Creek Recreation Management Area</b>				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
424	<p><b>Objective:</b> No similar objective in existing RMPs.</p>	<p><b>Objective:</b> Focus recreation and visitor services management on protecting and facilitating visitor opportunities to participate in auto touring, hiking and climbing.</p> <p>The ERMA will provide a recreation setting commensurate with other uses that 1) retains a low level of contrast between developments and the natural surrounding; 2) provides the necessary recreation facilities (parking areas, trails, interpretation sites) to facilitate activity participation; 3) provides basic on-site visitor services (signage, maps, etc.); and 4) clearly posts conditions of use throughout the area.</p>	<p><b>Objective:</b> No similar objective</p>	<p><b>Objective:</b> Manage the recreation area targeting rock climbers and scenic tourists who seek the outcomes described below. Target the following activities: scenic touring and rock climbing.</p> <p>See Appendix L for details on recreation settings in this recreation area.</p>	<p><b>Objective:</b> Focus recreation and visitor services management on protecting and facilitating visitor opportunities to participate in auto touring and climbing.</p> <p>The ERMA will provide a recreation setting commensurate with other uses that 1) retains a low level of contrast between developments and the natural surrounding; 2) provides the necessary recreation facilities (parking areas, trails, interpretation sites) to facilitate activity participation; 3) provides basic on-site visitor services (signage, maps, etc.); and 4) clearly posts conditions of use throughout the area.</p>
425	<p><b>Objective:</b> No similar objective in existing RMPs.</p>	<p><b>Objective:</b> No similar objective</p>	<p><b>Objective:</b> No similar objective</p>	<p><b>Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, participants in visitor/community assessments report an average 4.0 realization of the following targeted experience and benefit outcomes. (4.0 on a probability scale where: 1 = Not at all realized to 5 = totally realized).</p> <p>1. Enjoying group affiliation and togetherness,</p>	<p><b>Objective:</b> No similar objective.</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				<p>experiencing natural surroundings, learning more about the area, developing skills and abilities, enjoying risk-taking adventure</p> <p>2. Developing stronger ties with family and/or friends, improved self-confidence, greater appreciation for the scenic qualities of the area, improved outdoor skills</p> <p>3. Greater stewardship of recreation resources, improved local recreation-tourism economy</p> <p>4. Increased awareness and protection of recreation resources</p>	
426	No similar action in existing RMPs.	Designate East Creek as an ERMA (1,783 acres, Map 2-8b).	No similar action.	Designate East Creek as a SRMA (1,783 acres, Map 2-8d).	Designate East Creek as an ERMA (1,783 acres, Map 2-8p).
426a	No similar action in existing RMPs.	No similar management action for recreation settings.	Same as B.	<p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p>	<p><i>Same as Alternative B:</i></p> <p>No similar management action for recreation settings.</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				<p><i>Naturalness:</i> Maintain the rural nature of the RMA; all future changes to the landscape should complement the RMA objectives and not result in changes to the visual setting</p> <p><i>Facilities:</i> Developed interpretive stops along the Unaweep-Tabeguache Scenic Byway and parking areas for climbing access along Hwy 141 that complement RMA objectives</p> <p><b>Social Settings:</b></p> <p><i>Average Contacts:</i> Determine social capacity during implementation</p> <p><i>Average Group Size:</i> See Average Contacts</p> <p><i>Evidence of Use:</i> Sounds of people frequent</p> <p><b>Operational Settings:</b></p> <p><i>Access:</i> Non-motorized outside parking areas along Hwy 141</p> <p><i>Management Controls:</i> Restrictions on overnight camping</p> <p><i>Visitor Services:</i> On-site interpretation including kiosks and maps with words</p>	



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				and pictures; regular BLM personnel presence.	
427	No similar action in existing RMPs.	Close the RMA to overnight use and camping	No similar action.	Same as Alternative B.	Close the RMA to overnight use and camping.
428	No similar action in existing RMPs.	With partners, (climbing clubs, retail service providers, etc.) identify and improve primary access trails to and between climbing routes	No similar action.	No similar action.	With partners (climbing clubs, retail service providers, etc.), identify and improve primary access trails to and between climbing routes.
429	No similar action in existing RMPs.	Implement climbing closures during critical raptor nesting seasons (Appendix E).	No similar action.	Implement climbing closures during critical peregrine falcon nesting seasons (March 15 – July 31) when active nests have been identified.	Implement climbing closures during critical raptor nesting seasons when active nests have been identified.
430	No similar action in existing RMPs.	To reduce resource impacts on the top of routes, encourage placement of permanent rappel anchors.	Do not allow use of permanent anchors.	Same as Alternative B	To reduce resource impacts on the top of routes, encourage placement of permanent rappel anchors.
431	No similar action in existing RMPs.	Develop education program with partners to teach climbing resource ethics (Leave no Trace for climbing)	No similar action.	Same as Alternative B	Develop education program with partners to teach climbing resource ethics (Leave no Trace for climbing).
432	No similar action in existing RMPs.	To protect visual resources, require all permanent anchors to match the color of the rock surface (fixtures, hardware and webbing, etc.).	No similar action.	Same as Alternative B	To protect visual resources, require all permanent anchors to match the color of the rock surface (fixtures, hardware and webbing, etc.).
433	No similar action in existing RMPs.	Designate climbing routes and limit climbing to designated climbing routes	No similar action.	Do not designate climbing routes	Do not designate climbing routes.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
434	No similar action in existing RMPs.	When monitoring shows degradation of biological, cultural, or paleontological resources as a result of climbing, close access and climbing routes.	No similar action.	Intensively manage climbing activities (access routes, belay stations, climbing routes) to reduce risks to biological, cultural, and paleontological resources.	Intensively manage climbing activities (access routes, belay stations, climbing routes) to reduce risks to biological, cultural, and paleontological resources. This may include route closures when monitoring shows degradation of NCA resources.
435	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Do not issue Vending SRPs			Do not issue Vending SRPs
436	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Do not issue competitive SRPs		Issue competitive SRPs for rock climbing.	Do not issue competitive SRPs.
438	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	No similar action. Do not issue Competitive SRPs.	No similar action. Do not issue Competitive SRPs.	Issue low and medium impact (Class I and II in Appendix I) Competitive SRPs that are consistent with RMA objectives.	No similar action. Do not issue Competitive SRPs.
439	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives.	No similar action. Permits applications are assessed on a case-by-case basis.	Same as Alternative B	Only issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives.
440	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Organized Group SRPs that are consistent with RMA objectives.	No similar action. Permits applications are assessed on a case-by-case basis.	Same as Alternative B	Only issue low and medium impact (Class I and II in Appendix I) Organized Group SRPs that are consistent with RMA objectives.
441	<b>Sawmill Mesa/Wagon Park Recreation Management Area</b>				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
442	<p><b>Objective:</b> No similar objective in existing RMPs.</p>	<p><b>Objective:</b> Focus recreation and visitor services management on protecting and facilitating visitor opportunities to participate in hiking, horseback riding, mountain biking, motorcycle riding, ATV riding, big-game hunting, dispersed camping.</p> <p>The ERMA will provide a recreation setting commensurate with other uses that 1) retains a low level of contrast between developments and the natural surrounding; 2) provides the necessary recreation facilities (trails, trailheads, campsites) to facilitate activity participation; 3) provides basic on-site visitor services (signage, maps, etc.); and 4) clearly posts conditions of use throughout the area.</p>	<p><b>Objective:</b> No similar objective</p>	<p><b>Lower Sawmill Mesa</b> <b>Objective:</b> Manage the recreation area targeting mountain bikers who seek the outcomes described below. Target the following activities: mountain biking and camping.</p> <p>See Appendix L for details on recreation settings in this recreation area.</p> <p><b>Upper Sawmill Mesa</b> <b>Objective:</b> Focus recreation and visitor services management on protecting and facilitating visitor opportunities to participate in hiking, horseback riding, mountain biking, motorcycle riding, ATV riding, big-game hunting, dispersed camping.</p> <p>The ERMA will provide a recreation setting commensurate with other uses that 1) retains a low level of contrast between developments and the natural surrounding; 2) provides the necessary recreation facilities (trails, trailheads, campsites) to facilitate activity participation; 3) provides basic on-site visitor services (signage, maps, etc.); and 4) clearly posts conditions of use throughout the area.</p>	<p><b>Objective:</b> Focus recreation and visitor services management on protecting and facilitating visitor opportunities to participate in hiking, horseback riding, mountain biking, motorcycle riding, ATV riding, big-game hunting, dispersed camping, and backcountry auto touring.</p> <p>The ERMA will provide a recreation setting commensurate with other uses that 1) retains a low level of contrast between developments and the natural surrounding; 2) provides the necessary recreation facilities (trails, trailheads, campsites) to facilitate activity participation; 3) provides basic on-site visitor services (signage, maps, etc.); and 4) clearly posts conditions of use throughout the area.</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
443	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> No similar objective	<b>Objective:</b> No similar objective	<p><b>Lower Sawmill Mesa Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, participants in visitor/community assessments report an average 4.0 realization of the following targeted experience and benefit outcomes. (4.0 on a probability scale where: 1 = Not at all realized to 5 = totally realized).</p> <ol style="list-style-type: none"> <li>1. Getting some needed physical exercise, experiencing natural surroundings, enjoying frequent access to outdoor recreation activities</li> <li>2. Improved physical and mental health, living a more outdoor-oriented lifestyle</li> <li>3. Reduced health care costs, increased desirability as place to live or retire, improved local recreation-tourism economy</li> <li>4. Increased awareness and protection of recreation resources</li> </ol> <p><b>Upper Sawmill Mesa Objective:</b> No similar objective</p>	<b>Objective:</b> No similar objective.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
444	No similar action in existing RMPs.	Designate the Sawmill Mesa area as an ERMA (43,466 acres, Map 2–8b).	No similar action.	Designate Lower Sawmill Mesa as a SRMA (14,415 acres, Map 2–8d).  Designate Upper Sawmill Mesa as an ERMA (37,522 acres, Map 2–8d)	Designate the Sawmill Mesa/Wagon Park area as an ERMA (58,718 acres, Map 2–8p).
444a	No similar action in existing RMPs.	No similar management action for recreation settings.	Same as B.	<p><b>Lower Sawmill Mesa:</b></p> <p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p> <p><i>Remoteness:</i> Reduce the number of routes making the RMA more remote</p> <p><i>Naturalness:</i> Maintain the undeveloped nature of the RMA</p> <p><i>Facilities:</i> At trailheads, develop parking and toilet facilities; Develop the necessary trailheads and trail system (both single-track and ATV) to meet RMA objectives</p> <p><b>Social Settings:</b></p> <p><i>Average Contacts:</i> Away from parking areas, participants</p>	No similar management action for recreation settings.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				<p>encounter a season average of 10 groups per day</p> <p><i>Average Group Size:</i> Away from parking areas, participants encounter a seasonal average of 8 people per group</p> <p><i>Evidence of Use:</i> Sounds of people occasionally heard</p> <p><b>Operational Setting:</b></p> <p><i>Access:</i> non-motorized</p> <p><i>Management Controls:</i> Develop camping restrictions necessary to meet RMA objectives</p> <p><i>Visitor Services:</i> On-site information including kiosks and map/brochures with trail information and conditions of use; regular BLM personnel presence <b>Upper Sawmill Mesa:</b> Same as B.</p>	
445	No similar action in existing RMPs.	Designate BLM routes to maintain access and opportunity for motorized, mechanized and non-motorized non-mechanized recreation where not in conflict with cultural, biological or other natural resources.	No similar action.	<p>Lower Sawmill Mesa: Designate BLM routes to meet RMA objectives. Close two-track routes in order to make area more remote. Routes that are left open will be rehabbed to a single-track trail.</p> <p>Upper Sawmill Mesa: Same as Alternative B</p>	Designate BLM routes to maintain access and opportunity for motorized, mechanized and non-motorized non-mechanized recreation where not in conflict with cultural, biological or other natural resources.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
446	No similar action in existing RMPs.	Connect/reroute routes to make loop opportunities as necessary; reroute/repair unsustainable and eroding routes; Close redundant routes to reduce confusion by users	No similar action.	Lower Sawmill Mesa: With partners (e.g., user groups, retail shops, service providers) develop a mechanized loop trail system consistent with RMA objectives (see Appendix K, <b>Trail Design Criteria</b> ). During implementation, as new routes are constructed, existing routes would be closed and rehabbed.  Upper Sawmill Mesa: Same as Alternative B	Designate routes to meet RMA objectives and connect/reroute routes to make loop opportunities as necessary; reroute/repair unsustainable and eroding routes.  When feasible with support of local community and partners (e.g., user groups, retail shops, service providers), complete and implement an activity level plan to develop a non-motorized “Loop” trail system north of the Escalante Rim Road and outside the River Rims ACEC. During implementation, as new routes are constructed, existing routes would be closed and rehabbed or rehabbed to a single track trail.
447	No similar action in existing RMPs.	Allow for seasonal motorized vehicle use on closed routes to facilitate game retrieval during hunting season.	No similar action.	No similar action.	No similar action.
448	No similar action in existing RMPs.	No similar action.	No similar action.	Lower Sawmill Mesa: Limit overnight camping to designated campsites (outside of developed campgrounds).  Upper Sawmill Mesa: No similar action.	No similar action.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
449	No similar action in existing RMPs.	No similar action.	No similar action.	Lower Sawmill Mesa: If additional management controls are needed to control camping, construct a developed campground.  Upper Sawmill Mesa: No similar action.	No similar action.
450	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Do not issue Vending SRPs	Do not issue Vending SRPs	Lower Sawmill Mesa: Issue Vending SRPs only in conjunction with Competitive SRPs.  Upper Sawmill Mesa: Same as Alternative B	Do not issue Vending SRPs.
451	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives.	No similar action. Permit applications are assessed on a case-by-case basis.	Same as Alternative B	Only issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives.
452	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Organized Group SRPs that are consistent with RMA objectives.	No similar action. Permit applications are assessed on a case-by-case basis.	Issue low, medium and moderate impact (Class I, II, and III in Appendix I) Organized Group SRPs that are consistent with RMA objectives.  Same as Alternative B.	Only issue low and medium impact (Class I and II in Appendix I) Organized Group SRPs that are consistent with RMA objectives.
453	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low, medium and moderate impact (Class I, II, and III in Appendix I) Competitive SRPs that are consistent with RMA objectives.	No similar action. Permit applications are assessed on a case-by-case basis.	Same as Alternative B.	Only issue low, medium and moderate impact (Class I, II, and III in Appendix I) Competitive SRPs that are consistent with RMA objectives.
454	<b>Escalante Canyon Recreation Management Area</b>				



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
455	<b>Objective:</b> No similar objective in existing RMPs.	<p><b>Objective:</b> Focus recreation and visitor services management on protecting and facilitating visitor opportunities to participate in auto touring, picnicking, white-water kayaking, climbing, and dispersed camping.</p> <p>The ERMA will provide a recreation setting commensurate with other uses that 1) retains a low level of contrast between developments and the natural surrounding; 2) provides the necessary recreation facilities (trails, parking areas, interpretation sites, picnic sites, campsites) to facilitate activity participation; 3) provides basic on-site visitor services (signage, maps, etc.); and 4) clearly posts conditions of use throughout the area.</p>	<b>Objective:</b> No similar objective	<p><b>Objective:</b> Manage the recreation area targeting heritage tourists and tourism service providers who seek the outcomes described below. Target the following activities: auto touring and picnicking.</p> <p>See Appendix L for details on recreation settings in this recreation area.</p>	<p><b>Objective:</b> Manage the recreation area targeting visitors interested in the heritage and ecological resources of the area and tourism service providers who seek the outcomes described below. Target the following activities: auto touring and picnicking.</p>
456	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> No similar objective	<b>Objective:</b> No similar objective	<p><b>Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, participants in visitor/community assessments report an average 4.0 realization of the following targeted experience and benefit outcomes. (4.0 on a probability scale where: 1 = Not at all realized to 5 = totally realized).</p>	<p><b>Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, the majority of participants in visitor/community assessments report realization of the following targeted experience and benefit outcomes.</p> <ol style="list-style-type: none"> <li>1. Learning more about the wildlife, cultural,</li> </ol>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				<ol style="list-style-type: none"> <li>1. Learning more about the wildlife, cultural, and historical resources of the area, connecting with the experiences of those who traveled through the area in the past.</li> <li>2. Increased appreciation of the area's cultural history and wildlife resources</li> <li>3. Sustainability of the community's cultural heritage</li> <li>4. Greater support for protection of cultural and wildlife resources</li> </ol>	<ol style="list-style-type: none"> <li>and historical resources of the area, connecting with the experiences of those who traveled through the area in the past.</li> <li>2. Increased appreciation of the area's cultural history and wildlife resources</li> <li>3. Sustainability of the community's cultural heritage</li> <li>4. Greater support for protection of cultural and wildlife resources</li> </ol>
457	No similar action in existing RMPs.	Designate Escalante Canyon as an ERMA (2,880 acres, Map 2–8b).	No similar action.	Designate Escalante Canyon as a SRMA (2,880 acres, Map 2–8d ).	Designate Escalante Canyon as a SRMA (2,880 acres, Map2–8p).
457a	No similar action in existing RMPs.	No similar management action for recreation settings	Same as B	<p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p> <p><i>Naturalness:</i> Maintain the rural nature of the RMA; all future changes to the landscape should complement the RMA objectives and not</p>	<p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p> <p><i>Naturalness:</i> Maintain the rural nature of the RMA; all future changes to the landscape should</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				<p>result in changes to the historic setting</p> <p><i>Facilities:</i> Improve existing developed facilities; coordinate with CPW to develop facilities on State lands that complement RMA objectives</p> <p><b>Social Settings:</b></p> <p><i>Average Contacts:</i> Participants encounter a season average of 20 groups per day</p> <p><i>Average Group Size:</i> Participants encounter a seasonal average of 25 people per group</p> <p><i>Evidence of Use:</i> Sounds of people frequent</p> <p><b>Operational Setting:</b></p> <p><i>Access:</i> All use motorized - sedan or full-sized vehicles</p> <p><i>Management Controls:</i> Moderate level of restrictions on overnight camping</p> <p><i>Visitor Services:</i> On-site interpretation, including kiosks and maps with words and pictures; regular BLM personnel presence.</p>	<p>complement the RMA objectives and not result in changes to the historic setting</p> <p><i>Facilities:</i> Improve existing developed facilities; coordinate with CPW to develop facilities on State lands that complement RMA objectives</p> <p><b>Social Settings:</b></p> <p><i>Average Contacts:</i> Participants encounter a season average of 20 groups per day</p> <p><i>Average Group Size:</i> Participants encounter a seasonal average of 25 people per group</p> <p><i>Evidence of Use:</i> Sounds of people frequent</p> <p><b>Operational Setting:</b></p> <p><i>Access:</i> All use motorized - sedan or full-sized vehicles</p> <p><i>Management Controls:</i> Moderate level of restrictions on overnight camping</p> <p><i>Visitor Services:</i> On-site interpretation including kiosks and maps with words and pictures; regular BLM personnel presence.</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
458	No similar action in existing RMPs.	No similar action.	No similar action.	Designate Escalante Canyon as a Watchable Wildlife Area (see Watchable Wildlife Areas section of this table (row 629) for more detail).	Designate Escalante Canyon as a Watchable Wildlife Area (see Watchable Wildlife Areas section of this table (row 629) for more detail).
459	No similar action in existing RMPs.	No similar action.	Implement a Special Area SRP for the purpose of controlling user numbers and reducing conflicts with private land owners in Escalante Canyon.	No similar action.	No similar action.
460	No similar action in existing RMPs.	No similar action.	No similar action.	No similar action.	Allow climbing and kayaking to continue where it does not create conflicts with targeted recreation uses and outcomes (e.g., competition for parking and other facilities), and/or cultural or biological resource objectives.  Intensively manage climbing activities (access routes, belay stations, climbing routes) to reduce risks to biological, cultural, and paleontological resources. This may include route closures when monitoring shows degradation of NCA resources.
461	No similar action in existing RMPs.	With partners, (climbing clubs, retail service providers, etc.) identify and improve primary access trails to and between climbing routes	No similar action.	No similar action.	With partners, (climbing clubs, retail service providers, etc.) close climbing routes that are causing resource concerns; identify and improve primary access trails to and between climbing routes to protect biological and cultural resources.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
462	No similar action in existing RMPs.	Implement climbing closures during critical raptor nesting seasons (Appendix E).	No similar action.	Implement climbing closures during critical peregrine falcon nesting seasons when active nests have been identified (March 15 – July 31).	Implement climbing closures during critical raptor nesting seasons when active nests have been identified.
463	No similar action in existing RMPs.	To reduce resource impacts on the top of routes, encourage placement of permanent rappel anchors.	Do not allow use of permanent anchors.	Same as Alternative B.	To reduce resource impacts on the top of routes, encourage placement of permanent rappel anchors.
463a	No similar action in existing RMPs.	To protect visual resources, require all permanent anchors to match the color of the rock surface (fixtures, hardware and webbing, etc.).	No similar action.	Same as Alternative B.	To protect visual resources, require all permanent anchors to match the color of the rock surface (fixtures, hardware and webbing, etc.).
464	No similar action in existing RMPs.	Develop education program with partners to teach climbing resource ethics (Leave No Trace for climbing)	No similar action.	Same as Alternative B.	Develop education program with partners to teach climbing resource ethics (Leave No Trace for climbing)
466	Camping is limited to designated areas (BLM 1989a).	No similar action.	Prohibit camping in the RMA.	Designate campsites within the RMA. Overnight camping limited to developed campgrounds and designated campsites.	Designate campsites within the RMA. Overnight camping limited to developed campgrounds and designated campsites.
467	No similar action in existing RMPs.	No similar action.	No similar action.	Provide opportunities for partners (e.g., local school districts, recreation and environmental groups, CNHP) to assist the BLM in providing biological/ecological education/interpretation to help promote learning about the past and natural systems.	Provide opportunities for partners (e.g., local school districts, recreation and interpretive associations, CNHP) to assist the BLM in providing biological/ecological, cultural and historical education/interpretation to help promote learning about the past and natural systems.
468	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Do not issue Vending SRPs			Do not issue Vending SRPs

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
470	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Do not issue Competitive SRPs			Do not issue Competitive SRPs
472	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives.	No similar action. Permits applications are assessed on a case-by-case basis.	Same as Alternative B	Only issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA and ACEC objectives.
473	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Organized Group SRPs that are consistent with RMA objectives.	No similar action. Permits applications are assessed on a case-by-case basis.	Issue low, medium and moderate impact (Class I, II and III in Appendix I) Organized Group SRPs that are consistent with RMA objectives.	Only issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA and ACEC objectives.
474	<b>Cottonwood Canyon/Dry Fork Recreation Management Area</b>				
475	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> No similar objective	<b>Objective:</b> No similar objective	<b>Objective:</b> Manage the recreation area targeting non-motorized, non-mechanized, quiet trail users who seek the outcomes described below. Target the following activities: hiking and horseback riding.  See Appendix L for details on recreation settings in this recreation area.	<b>Objective:</b> No similar objective.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
476	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> No similar objective	<b>Objective:</b> No similar objective	<p><b>Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, participants in visitor/community assessments report an average 4.0 realization of the following targeted experience and benefit outcomes. (4.0 on a probability scale where: 1 = Not at all realized to 5 = totally realized).</p> <ol style="list-style-type: none"> <li>1. Enjoying the area's wildlife, scenery, and views, experiencing the natural surroundings, enjoying solitude, learning about paleontological resources</li> <li>2. Greater freedom from urban living. Closer relationship with the natural world</li> <li>3. Greater protection of wildlife and plant habitat from growth and development</li> <li>4. Maintenance/preservation of distinctive public land recreation setting character</li> </ol>	<b>Objective:</b> No similar objective.
477	No similar action in existing RMPs.	No similar action.	No similar action.	Designate Cottonwood Canyon as a SRMA (6,576 acres, Map 2–8d).	No similar action.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
477a	No similar action in existing RMPs.	No management action for recreation settings.	Same as B	<p>Same as B</p> <p>Support outcome objectives by managing the desired recreation settings described below. If monitoring indicates outcome objectives are not being achieved, settings will be incrementally adapted until monitoring shows the settings are supporting the outcome objectives:</p> <p><b>Physical Settings:</b></p> <p><i>Remoteness:</i> Maintain the roadless nature of the RMA</p> <p><i>Naturalness:</i> Maintain the undeveloped nature of the RMA</p> <p><i>Facilities:</i> Designate primitive parking areas along the edge of the RMA</p> <p><b>Social Settings:</b></p> <p><i>Average Contacts:</i> Away from parking areas, participants encounter a season average of 10 groups per day</p> <p><i>Average Group Size:</i> Away from parking areas, participants encounter a seasonal average of 8 people per group</p> <p><i>Evidence of Use:</i> Sounds of people rare or infrequent</p>	No similar action.



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				<b>Operational Setting:</b>  <i>Access:</i> non-motorized/non-mechanized  <i>Management Controls:</i> Basic conditions of use posted at key access points  <i>Visitor Services:</i> No on-site information; infrequent BLM personnel presence	
478	No similar action in existing RMPs.	No similar action.	No similar action.	Construct the minimal miles of single-track trail necessary to meet RMA objectives and provide targeted users access into the area.	No similar action.
479	No similar action in existing RMPs.	No similar action.	No similar action.	Designate the RMA as VRM I (exception: allow landscape changes to meet RMA objectives) Project design must minimize contrast with existing landscape elements of form, line, color, and texture.	No similar action.
480	No similar action in existing RMPs.	No similar action.	No similar action.	Prohibit surface-disturbing activities to protect undeveloped settings and meet RMA objectives.	No similar action.
481	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	No similar action.	No similar action.	Do not issue Vending SRPs.	No similar action.
482	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	No similar action.	No similar action.	Do not issue Competitive SRPs.	No similar action.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
483	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	No similar action. Permits applications are assessed on a case-by-case basis.	No similar action. Permits applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Commercial SRPs that are consistent with RMA objectives.	No similar action.
484	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	No similar action. Permits applications are assessed on a case-by-case basis.	No similar action. Permits applications are assessed on a case-by-case basis.	Issue low and medium impact (Class I and II in Appendix I) Organized Group SRPs that are consistent with RMA objectives.	No similar action.
485	<b>Scientific Use</b>				
486	<b>Goal:</b> Encourage, support, and conduct scientific research within the D-E NCA to improve understanding, management, and protection of the D-E NCA's resources.				
487	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Encourage, support, and conduct scientific research while minimizing disturbance and consumption of resources and maximizing benefits to the management goals of the D-E NCA and to the scientific community.			<b>Objective:</b> Encourage, support, and conduct scientific research while minimizing disturbance and consumption of resources and maximizing benefits to the management goals of the D-E NCA and to the scientific community.
488	No similar action in existing RMPs.	Require all research (paleontological and cultural) to be authorized (by the D-E NCA manager) or permitted. Require reports as part of the permitting and authorization process.			Require a permit or authorization from BLM for all research (paleontological, cultural, and other). Require reports as part of the permitting and authorization process.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
489	No similar action in existing RMPs.	The general management approach regarding collection would be to prohibit collection of materials from the D-E NCA except when specimens are unique, uncommon, or scientifically or educationally significant, and when there are significant benefits to understanding the D-E NCA's purposes, management goals, or significant advances in general scientific understanding to be gained by collection, or when the site is vulnerable to vandalism or theft and there is no preferred <i>in situ</i> method of protecting the site. Significant as determined on a case-by-case basis by the appropriate resource specialist(s).			The general management approach regarding collection would be to prohibit collection of materials from the D-E NCA except when specimens are unique, uncommon, or scientifically or educationally significant, and when there are significant benefits to understanding the D-E NCA's purposes, management goals, or significant advances in general scientific understanding to be gained by collection, or when the site is vulnerable to vandalism or theft and there is no preferred <i>in situ</i> method of protecting the site. Significant as determined on a case-by-case basis by the appropriate resource specialist(s).
490	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Improve baseline knowledge of the species present in D-E NCA, and general understanding of the ecosystem processes (e.g., food web dynamics, vegetation succession, water dynamics), cycles (e.g., fire return and nutrient cycles) and anthropogenic influences (e.g., grazing, recreation) at work in D-E NCA.			<b>Objective:</b> Improve baseline knowledge of the species present in D-E NCA, and general understanding of the ecosystem processes (e.g., food web dynamics, vegetation succession, water dynamics), cycles (e.g., fire return and nutrient cycles) and anthropogenic influences (e.g., grazing, recreation) at work in D-E NCA.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
491	Continue basic trend and baseline monitoring that informs management decisions.		Continue basic trend and baseline monitoring and encourage and support research both internally and from external sources that inform management decisions. Research would include smaller 'pilot' projects, as well as longer term, larger projects. Research would be used to inform management decisions and actions.		Continue basic trend and baseline monitoring and encourage and support research both internally and from external sources that inform management decisions. Research would include smaller 'pilot' projects, as well as longer term, larger projects. Research would be used to inform management decisions and actions.
492	No similar action in existing RMPs.	Encourage research, both internally and externally that addresses priority species and vegetation objectives and evaluates priority species and vegetation rankings (Appendix A and Appendix G).			Encourage research, both internally and externally that addresses priority species and vegetation objectives and evaluates priority species and vegetation rankings (Appendix A and Appendix G).
493	Focus monitoring on the resources identified as purposes of the D-E NCA. See individual resource sections for resource-specific monitoring guidance.				
494	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Improve baseline knowledge and general understanding of geological, cultural, historical, archaeological, and paleontological resources			<b>Objective:</b> Improve baseline knowledge and general understanding of geological, cultural, historical, archaeological, and paleontological resources
495	Continue baseline and trend monitoring and encourage and support research both internally and from external sources. See Geological and Paleontological Resources (row 1) and Cultural Resources (row 225) for resource-specific monitoring guidance.				
496	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Improve understanding of the socioeconomic impacts and benefits associated with the D-E NCA.			<b>Objective:</b> Improve understanding of the social, economic, and recreational benefits associated with the D-E NCA.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
497	No similar action in existing RMPs.	<p>Monitor visitor use, visitor health and safety, resource conditions, and the physical qualities of the landscape with the help of recreation-tourism partnerships (e.g., towns, user groups, recreation-tourism organizations, outfitters, CPW, etc.) in the following RMAs:</p> <ul style="list-style-type: none"> <li>• Cactus Park</li> <li>• East Creek</li> <li>• Gunnison River</li> <li>• Escalante Dispersed</li> <li>• Hunting Ground</li> <li>• Escalante Canyon</li> </ul>	<p>Monitor outcome attainment and preferences through customer assessments (e.g., focus group interviews or visitor studies) on five year intervals or as funding allows. Monitor activity participation and recreation setting characteristics (RSCs) annually during the primary use season of June through September in the following RMAs:</p> <ul style="list-style-type: none"> <li>• Gunnison River</li> <li>• Cactus Park</li> </ul>	<p>Monitor outcome attainment and preferences through customer assessments (e.g., focus group interviews or visitor studies) on five year intervals or as funding allows. Monitor activity participation and RSCs annually during the primary use season of June through September in the following RMAs:</p> <ul style="list-style-type: none"> <li>• Cactus Park</li> <li>• Ninemile Hill</li> <li>• East Creek</li> <li>• Gunnison Bluffs</li> <li>• Gunnison River</li> <li>• Sawmill Mesa</li> <li>• Cottonwood Canyon</li> <li>• Hunting Ground</li> <li>• Escalante Canyon</li> </ul>	<p>Use a variety of tools and techniques (including but not limited to surveys, economic studies, focused discussions) to determine social and economic non-market as well as market economic benefits of the NCA. Implement appropriate monitoring and inventory as funding allows. Engage partners to accomplish goals, as appropriate.</p> <p>Conduct monitoring and inventories with affected communities (on-site visitors, local communities, partners, etc.) to increase understanding of recreation activity, setting and outcome preferences.</p>
498	<b>Educational Use</b>				
499	<b>Goal:</b> Provide public education opportunities that increase awareness, understanding, and appreciation of the resources and stewardship values relevant to D-E NCA.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
500	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Provide opportunities for youth and the general public to learn about the purposes (geological, cultural, archaeological, paleontological, and natural resources, etc.) of D-E NCA to encourage public stewardship and enjoyment.			<b>Education Outcome Objective:</b> Participants in visitor/community assessments report realization of the following targeted experience and benefit outcomes <ul style="list-style-type: none"> <li>• Learning more about the area's unique and important resources and values (purposes of the D-E NCA)</li> <li>• Greater appreciation for and stewardship of the biological and cultural resources in the D-E NCA</li> <li>• Greater appreciation of the historical interaction of human activities with the D-E NCA's landscape</li> </ul>
501	Continue required information sharing and partnership opportunities related to education.	Emphasize the use of interpretive services (kiosks, guided tours, self-guided tours, etc.) and materials to inform youth and the general public about D-E NCA's natural and cultural resources and management actions.			Emphasize the use of interpretive services (kiosks, guided tours, self-guided tours, etc.) and materials to inform youth and the general public about D-E NCA's natural and cultural resources and management actions.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
502	No similar action in existing RMPs. Allocation of areas for education is considered on a case-by-case basis.	Do not allocate areas as outdoor classroom/education emphasis areas.	<p>Manage the following areas as outdoor classroom/education emphasis areas for natural, geological and cultural resources:</p> <ul style="list-style-type: none"> <li>• Cactus Park/Ninemile Hill Recreation Management Area (Map 2–8c)</li> <li>• Old Spanish NHT</li> </ul>	<p>Manage the following areas as outdoor classroom/education emphasis areas for natural, geological, paleontological and cultural resources:</p> <ul style="list-style-type: none"> <li>• Escalante Canyon Watchable Wildlife Area (Map 2–16d)</li> <li>• Hunting Ground Recreation Management Area (Map 2–8d)</li> <li>• Big Dominguez Canyon Heritage Area (Map 2-9p)</li> <li>• Rambo/Little Dominguez Canyon Heritage Area (Map 2-9p)</li> <li>• Leonards Basin Heritage Area (Map 2-9p)</li> </ul>	<p>Manage the following areas as outdoor classroom/education emphasis areas for natural, geological, paleontological and cultural resources:</p> <ul style="list-style-type: none"> <li>• Escalante Canyon Watchable Wildlife Area (Map 2–16p)</li> <li>• Old Spanish NHT</li> </ul>
503	<b>Livestock Grazing</b>				
504	<b>Goal:</b> Support local agricultural communities, while achieving Colorado Public Land Health Standards and maintaining healthy, sustainable ecosystems in balance with the goals and objectives of the purposes of the D-E NCA.				
505	<b>Objective:</b> Meet the forage demands of livestock operations consistent with achieving the Colorado Public Land Health Standards (BLM 1997 and Appendix D).	<b>Objective:</b> Meet the forage demands of livestock operations consistent with achieving the Colorado Public Land Health Standards (BLM 1997 and Appendix D) and consistent with an emphasis on allowing natural processes to dictate the condition of biological resources.	<b>Objective:</b> Meet the forage demands of livestock operations consistent with achieving the Colorado Public Land Health Standards (BLM 1997 and Appendix D) and consistent with an emphasis on biological and natural resource restoration and cultural resource protection.	<b>Objective:</b> Meet the forage demands of livestock operations consistent with achieving the Colorado Public Land Health Standards (BLM 1997 and Appendix D) and consistent with an emphasis on recreation, historic and scenic values.	<b>Objective:</b> Meet the forage demands of livestock operations consistent with achieving the Colorado Public Land Health Standards (BLM 1997 and Appendix D) and consistent with recreational, biological, natural and cultural resource objectives.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
506	Make 204,921 acres available for livestock grazing (Map 2–4a). Provide 14,403 initial AUMs of livestock forage. Both acreage and AUM numbers may be adjusted based on the results of ongoing rangeland monitoring.	Make 188,389 acres available for livestock grazing (Map 2–4b). Provide 10,034 initial AUMs for livestock forage. Both acreage and AUM numbers may be adjusted based on the results of ongoing rangeland monitoring.	Make 209,059 acres available for livestock grazing (Map 2–4c). Provide 14,185 initial AUMs of livestock forage. Both acreage and AUM numbers may be adjusted based on the results of ongoing rangeland monitoring.	Make 209,617 acres available for livestock grazing (Map 2–4d). Provide 14,416 initial AUMs of livestock forage. Both acreage and AUM numbers may be adjusted based on the results of ongoing rangeland monitoring.	Make 206,127 acres available for livestock grazing (Map 2–4p). Provide 14,349 initial AUMs of livestock forage. Both acreage and AUM numbers may be adjusted based on the results of ongoing rangeland monitoring and site-specific analysis.
507	Please see the section of this table entitled Special Status Species and Natural Communities (row 115) for a description of management actions taken to reduce the probability of disease transmission between domestic sheep and desert bighorn sheep.				
508	<p>In Management Unit 1 (68,362 acres within D-E NCA), livestock grazing will have first priority for any additional forage to increase forage available for livestock grazing (BLM 1989a).</p> <p>In Management Units 3, 11, 12 and 16 (11,206 acres within the D-E NCA), additional forage will be divided equally between livestock grazing and wildlife to provide forage for both resources (BLM 1989a).</p>	Increases in forage availability could not be allocated to livestock.	Increases in forage availability could be allocated to livestock grazing where such allocation would still allow for progress toward the achievement of biological objectives.		Changes (increases or decreases) in forage allocation for livestock grazing could be made where such changes would allow for progress toward the achievement of biological objectives.



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
509	In Management Unit 12 (Escalante Canyon), livestock grazing will continue at current levels unless studies determine threatened or endangered or unique species and their potential habitat are being adversely affected. This is designed to protect threatened, endangered and unique species from potential livestock destruction (BLM 1989a).	<p>Close the following areas to livestock use (21,589 acres, Map 2–4b):</p> <ul style="list-style-type: none"> <li>• Bean allotment (361 acres, due to conflicts with adjoining private lands)</li> <li>• Rose Creek (557 acres, due to inaccessibility and protection of riparian values)</li> <li>• Upper Escalante Canyon (1,619 acres, due to protection of riparian values and special status plants and plant communities)</li> <li>• Alkali Flats allotment (3,452 acres because of location in sensitive, low-precipitation area and because a high proportion (&gt;25%) of the allotment is not meeting Colorado Standards of Public Land Health)</li> <li>• Antelope allotment (1,764 acres because of location in sensitive, low-precipitation area and because a high proportion (&gt;25%) of the allotment is not meeting Colorado Standards of Public Land Health)</li> </ul>	<p>Close the following areas to livestock use (918 acres, Map 2–4c):</p> <ul style="list-style-type: none"> <li>• Bean allotment (361 acres, due to conflicts with adjoining private lands)</li> <li>• Rose Creek (557 acres, due to inaccessibility and protection of riparian values)</li> </ul>	<p>Close the following areas to livestock use (361 acres, Map 2–4d):</p> <ul style="list-style-type: none"> <li>• Bean Allotment (361 acres, due to conflicts with adjoining private lands)</li> </ul>	<p>Close the following areas to livestock use (361 acres, Map 2–4p):</p> <ul style="list-style-type: none"> <li>• Bean Allotment (361 acres, due to conflicts with adjoining private lands)</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
		<ul style="list-style-type: none"> <li>Lower Escalante allotment (2,319 acres because of location in sensitive, low-precipitation area and because a high proportion (&gt;25%) of the allotment is not meeting Colorado Standards of Public Land Health)</li> <li>Wells Gulch allotment (6,448 acres because of location in sensitive, low-precipitation area and because a high proportion (&gt;25%) of the allotment is not meeting Colorado Standards of Public Land Health)</li> <li>Unallotted areas, which are not a part of a grazing allotment (5,056 acres)</li> </ul>			
510	<p>Of the corrected acreage noted in row 506 as available to grazing, active movement would be the only livestock use allowed in the following areas to protect riparian values (existing allotment management plans, 8,141 acres, Map 2–4a):</p> <ul style="list-style-type: none"> <li>Escalante Canyon (1,692 acres, Dominguez Allotment terms of use 2011)</li> <li>Big Dominguez (3,135 acres, Wagon Park</li> </ul>	<p>Of the corrected acreage noted in row 506 as available to grazing, active movement would be the only livestock use allowed in the following areas within existing allotments to protect riparian values (12,756 acres, Map 2–4b):</p> <ul style="list-style-type: none"> <li>Cottonwood Creek riparian zone</li> <li>Gunnison River riparian zone</li> <li>Big and Little Dominguez</li> </ul>	<p>Of the corrected acreage noted in row 506 as available to grazing, active movement would be the only livestock use allowed in the following areas within existing allotments to protect riparian values (12,097 acres, Map 2–4c):</p> <ul style="list-style-type: none"> <li>Gunnison River riparian zone</li> <li>Big and Little Dominguez</li> <li>Dry Fork of Escalante</li> <li>Escalante Canyon</li> </ul>	<p>Of the corrected acreage noted in row 506 as available to grazing, active movement would be the only livestock use allowed in the following areas (within and outside of existing allotments) to protect riparian values (6,275 acres, Map 2–4d):</p> <ul style="list-style-type: none"> <li>Big Dominguez</li> <li>Dry Fork of Escalante</li> </ul>	<p>Of the acreage noted in row 506 as available to grazing: to protect riparian values, sensitive plants, and saline seeps limit livestock use in riparian areas along the following rivers/creeks to active movement between grazing areas (11,938 acres, Map 2–4p):</p> <ul style="list-style-type: none"> <li>Big and Little Dominguez Creeks</li> <li>Dry Fork of Escalante Creek</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
	<p>Allotment) Management Plan 1988)</p> <ul style="list-style-type: none"> <li>• Little Dominguez (3,313 acres, Wagon Park Allotment Management Plan 1988)</li> </ul> <p>Trailing in Management Unit 9 (2,772 acres within the D-E NCA) would be confined to established roads and limited as much as possible to protect riparian values. Exclude livestock grazing in these areas from March 1 to range readiness (BLM 1989a).</p>	<ul style="list-style-type: none"> <li>• Dry Fork of Escalante</li> <li>• Lower Escalante Canyon</li> <li>• Escalante tributaries above forks</li> </ul>	<ul style="list-style-type: none"> <li>• Escalante tributaries above forks</li> </ul>		<ul style="list-style-type: none"> <li>• Escalante Creek below forks</li> <li>• Rose Creek</li> </ul> <p>Limitation will be implemented through changes to grazing permit terms and conditions, allotment management plans, and/or issuance of crossing permits.</p> <p>Intensively manage grazing in the Gunnison River riparian zone to improve riparian vegetation and minimize conflicts with recreation.</p> <p>If land health concerns associated with livestock use are documented along the Gunnison River or in other riparian areas not identified above, limit livestock use in the riparian area to active movement between grazing areas.</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
511	No similar action in existing RMPs.	Close all unallotted areas to livestock use, except where <b>active movement</b> was established prior to the Omnibus Act of 2009 (5,056 acres, Map 2–4b).	Livestock <b>active movement</b> would be the only livestock use allowed in all unallotted areas (5,056 acres, Map 2–4c).	All unallotted areas would be open to livestock grazing (5,056 acres: (acreage also included in row 506 as available to grazing) Map 2–4d).	<p>Unallotted areas would be managed according to the following (Map 2–4p):</p> <p><b>Area open to livestock grazing</b> (acreage also included in row 506 as available to grazing): 994 acres</p> <p><b>Area where <b>active movement</b> would be the only livestock use allowed:</b>572 acres</p> <p><b>Area closed to livestock use:</b>3,850 acres</p> <p>New (unallotted) land acquisitions would be evaluated and closed or allotted to neighboring permittees on a case-by-case basis considering topography and resource objectives.</p>
No similar action.	No similar action.	No similar action.	No similar action.	No similar action.	<p>In order to improve consistency of domestic sheep management within the D-E NCA, administratively divide two allotments that span the D-E NCA and the UFO and are separated by Highway 50. Wells Gulch west of Hwy 50 is named the Dominguez Rim allotment; Alkali Flats west of Hwy 50 is named the Huff allotment (See Map 2–4p).</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
512	No similar action in existing RMPs. Construction of facilities is analyzed on a case-by-case basis.	Do not construct new livestock facilities (e.g., water developments, fences, corrals), unless substantial degradation to biological or cultural resources would occur in the absence of these facilities.	Construct new livestock facilities (e.g., water developments, fences, corrals) as needed to achieve biological resource objectives.		Construct new livestock facilities (e.g., water developments, fences, corrals) as needed to achieve biological resource objectives.
513	<p>No similar action in existing RMPs. The Omnibus Act states the BLM may allow construction of new livestock watering facilities within the Wilderness in accordance with</p> <ol style="list-style-type: none"> <li>1. Section 4(d)(4) of the Wilderness Act; and</li> <li>2. The guidelines set forth in Appendix A of the report of the Committee on Interior and Insular Affairs of the House of Representatives accompanying H.R. 2570 of the 101st Congress.</li> </ol> <p>The final wilderness EIS for the Dominguez Canyon WSA stated “an estimated 7 earthen reservoirs would be constructed on the portion of the WSA recommended suitable in the Dominguez Allotment in the Montrose District” (BLM 1989c).</p>	Do not construct water developments in the Wilderness.	Construct up to 17 water developments to allow for maximum distribution for utilization of available forage based on allocated AUMs in the Wilderness portion of the Dominguez allotment.		<p>BLM may authorize the construction of up to 11 water developments in the Wilderness portion of the Dominguez allotment in accordance with Section 4(d)(4) of the Wilderness Act and the congressional grazing guidelines</p> <p>Specific locations and number of developments to be constructed would be implemented on the basis of the following criteria:</p> <ul style="list-style-type: none"> <li>• Minimum requirements analysis, which includes:</li> <li>• Prioritizing locations outside wilderness</li> <li>• Minimizing the number of developments necessary to meet biological objectives and to improve naturalness</li> <li>• Placement of developments supports an allotment management strategy that protects wilderness values.</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					Until an allotment management strategy that protects wilderness values is fully implemented; adopt an interim management strategy that addresses improvement and protection of naturalness.
514	No similar actions in existing RMPs. Conflicts between livestock grazing and cultural resource objectives are resolved on a case-by-case basis.	Prohibit livestock grazing in areas where monitoring shows conflicts between livestock grazing and cultural resource objectives.	Intensively manage areas with conflicts between livestock grazing and cultural resource objectives.  If intensive management fails to resolve the conflict, evaluate all or part of allotment for closure.		Intensively manage areas with conflicts between livestock grazing and cultural resource objectives.  If intensive management fails to resolve the conflict, evaluate all or part of allotment for closure.
515	In areas where livestock grazing contributes to failure to meet land health standards, restrict or adjust livestock grazing.  Revise allotment management plans to resolve conflicts between grazing and this plan's proposed actions for soils, riparian, and water resources (BLM 1987).  Management Unit 1 (68,362 acres within the D-E NCA) will be intensively managed to improve vegetation conditions and livestock forage (BLM 1989a). In Management Unit 3 (6,587 acres), no projects will be permitted that would reduce	In areas where livestock grazing prevents achievement of biological resource objectives, evaluate AUM reduction and/or closure of part or all of the allotment(s).	In areas where livestock grazing prevents achievement of biological resource objectives, intensively manage to reduce impacts to biological resources.  If intensive management fails to resolve the conflict, evaluate for AUM reduction and/or closure of all or part of the allotment(s).		In areas where monitoring shows that livestock grazing is preventing achievement of biological resource objectives, adjust timing of use or intensively manage to reduce impacts to biological resources.  If intensive management fails to resolve the conflict, evaluate for AUM reduction and/or closure of all or part of the allotment(s).

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
	the woodland base (BLM 1989a).				
516	Assess AUM availability using rangeland monitoring or vegetative inventory data (e.g., NRCS carrying capacity protocol, land health assessments) where livestock grazing contributes to failure to meet land health standards.	Periodically assess AUM availability using rangeland monitoring or vegetative inventory data (e.g., NRCS carrying capacity protocol, land health assessments). Prioritize areas preventing achievement of biological resource objectives.			Periodically assess AUM availability using rangeland monitoring and/or vegetative inventory data (e.g., NRCS carrying capacity protocol, land health assessments). Prioritize areas where livestock grazing is preventing achievement of biological resource objectives.
517	No similar action in existing RMPs.	Close allotments with highly degraded desert shrub/saltbush vegetation to livestock use.	In areas with degraded desert shrub/saltbush vegetation, avoid grazing use during the critical growth period (generally the period of early April to early October, depending on seasonal conditions) to allow for plant recovery while adequate soil moisture is available. Exception: where use inside of this time period would help achieve biological objectives.	Continue to determine seasons of grazing use on a case-by-case basis.	To improve conditions in desert shrub/saltbush communities, limit grazing use period within limited precipitation zones (below 6,000 feet), to October 1 to April 15 in order to avoid active growth, unless otherwise specified in an allotment management plan or grazing use agreement to help achieve biological objectives.
518	No similar action in existing RMPs.	<p>Designate allotments into one of three categories (I, M or C) on the basis of the following criteria:</p> <p>“I” = Intensively manage allotment because of conflicts with other resource objectives, such as conserving T&amp;E species and/or meeting land health standards.</p> <p>“M” = Maintain allotment with current management. The allotment causes no immediate conflicts with other resources and is meeting land health standards.</p> <p>“C” = Custodial Allotment. The allotment is small in size and AUM numbers and has lower priority than larger allotments. It does not cause major conflicts with other resources.</p>			

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
519	In Management Unit 1 (68,362 acres within the D-E NCA), any unallotted areas or relinquished permits will be reissued to permit livestock grazing (BLM 1989a).	Close vacated (those that are available for livestock use but do not have an active permit or lease) or relinquished (those where the permittee voluntarily and permanently surrenders their grazing preference) allotments.	Allow for establishment of grass banks on vacated or relinquished allotments to provide for additional management options.	Evaluate combining vacated or relinquished allotments, or unallotted areas, with active allotments where feasible to provide for additional management options.	Based on biological resource objectives, evaluate and allocate vacated or relinquished allotments, or unallotted areas for: <ul style="list-style-type: none"> <li>combining with active allotments to provide for additional management options.</li> <li>establishing grass banks</li> <li>closure to grazing</li> </ul>
520	Include periodic rest during the active growing season when necessary as part of authorized use (on a case by case basis determined by the management plan).	Include periodic rest during the active growing season as part of authorized use (where appropriate for achieving biological resource objectives).			Include periodic rest during the active growing season as part of authorized use (where appropriate for achieving biological resource objectives).
521	In Management Units 3, 11, 12 and 16 (11,206 acres within the D-E NCA), livestock grazing will be limited to 50% utilization of key forage species to permit sustained forage capacity (BLM 1989a). In Management Unit 9 (2,772 acres within the D-E NCA), livestock grazing may be limited to 35% utilization of key forage species to increase riparian cover (BLM 1989a). In all other areas of the D-E NCA, allowable utilization is determined on an allotment-by-allotment basis.	Limit, as a guideline, allowable utilization level to no more than 35% of the current year's production of desired cool-season and warm-season perennial grass species.	For areas meeting public land health standards: Limit, as a guideline, allowable utilization level to no more than 50% of the current year's production of desired cool-season and warm-season perennial grass species.  For areas where public land health standards are not being met: implement, as a guideline, an allowable utilization level of no more than 35% of the current year's production of desired cool-season and warm-season perennial grass species.	Limit, as a guideline, allowable utilization level to no more than 60% of the current year's production of desired cool-season and warm-season perennial grass species.	Livestock grazing permits will include seasonal utilization limits for palatable forage that reflect BMPs and are consistent with meeting land health standards or other biological objectives. Lower limits will be established for grazing allotments with land health problems where grazing is contributing to those problems.



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
522	<b>Objective:</b> No similar objective		<b>Objective:</b> Manage livestock grazing and recreation to reduce conflicts.		<b>Objective:</b> Manage livestock grazing and recreation to reduce conflicts.
523	No similar action in existing RMPs.	Restrict recreation (access, timing, activity) as necessary to reduce conflicts between recreation and livestock grazing and to achieve livestock grazing objectives.	When identifying locations for high concentrations of recreation activity and/or facilities, ensure the locations do not create pervasive conflict with livestock grazing.		Resolve conflicts between livestock grazing and recreation on a case-by-case basis in accordance with BLM policies.
524	No similar action.		When developing Allotment Management Plans, consider livestock management practices inside SRMAs that reduce livestock concentration (with associated livestock waste and trampling) in and around developed and undeveloped recreation facilities during key recreation periods.		When developing grazing strategies, consider livestock management practices inside SRMAs that reduce livestock concentration (with associated livestock waste and trampling) in and around developed and undeveloped recreation facilities during key recreation periods.
525	<b>Goal:</b> Develop and encourage public and stakeholder understanding of livestock grazing management within the D-E NCA.				
526	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Improve communication and understanding of proper range management practices and expectations between the BLM, grazing permittees and the general public. Improve understanding of livestock grazing as a traditional and continuing current use in Mesa, Delta, and Montrose Counties and communities.			<b>Objective:</b> Improve communication and understanding of range standards and expectations between the BLM, grazing permittees and the general public. Improve understanding of livestock grazing as a traditional and continuing current use in Mesa, Delta, and Montrose Counties and communities.
527	No similar action in existing RMPs.	Educate public on livestock grazing as a traditional use through educational and interpretive messaging.			Educate public on livestock grazing as a traditional and continuing, appropriate use of public lands through educational and interpretive messaging.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
528	<b>Transportation and Travel Management</b>				
529	<b>Goal:</b> Define a travel and transportation network that supports the goals and objectives of the purposes of the D-E NCA				
530	<b>Objective:</b> Manage the D-E NCA's route system to meet objectives for the purposes of the D-E NCA (including recreation), while allowing continued use of the D-E NCA for livestock grazing, land authorizations and access to non-Federal property.				
531	<p>Designate the following areas as closed to public motorized travel (69,263 acres, Map 2-13a):</p> <ul style="list-style-type: none"> <li>• Dominguez Canyon Wilderness</li> <li>• Dominguez Canyon Wilderness Study Area</li> </ul> <p>Designate all other areas of the D-E NCA as limited to designated routes for motorized travel (140,737 acres, Map 2-13a).</p>	<p>Designate the following areas as closed to public motorized travel (91,009 acres, Map 2-13b):</p> <ul style="list-style-type: none"> <li>• Dominguez Canyon Wilderness</li> <li>• Dominguez Canyon Wilderness Study Area</li> <li>• Dominguez Addition lands with wilderness characteristics</li> <li>• Dry Fork of Escalante lands with wilderness characteristics</li> <li>• Cottonwood Creek lands with wilderness characteristics</li> <li>• Gunnison Slopes lands with wilderness characteristics</li> </ul> <p>Designate all other areas of the D-E NCA as limited to designated routes for motorized travel (119,309 acres, Map 2-13b).</p>	<p>Designate the following areas as closed to public motorized travel (66,193 acres, Maps 2-13c and 2-13d):</p> <ul style="list-style-type: none"> <li>• Dominguez Canyon Wilderness</li> </ul> <p>Designate all other areas of the D-E NCA as limited to designated routes for motorized travel (144,126 acres, see Maps 2-13c, 2-13d )</p>	<p>Designate the following areas as closed to off-highway vehicle (OHV) use (see Glossary) (66,193 acres, Map 2-13p):</p> <ul style="list-style-type: none"> <li>• Dominguez Canyon Wilderness</li> </ul> <p>Designate all other areas of the D-E NCA as limited to designated routes for motorized travel (144,126 acres, see Map 2-13p)</p>	
532	Authorize the use of motorized vehicles for administrative purposes within areas that are closed to OHV use (see Glossary). Authorization would be evaluated on a case-by-case basis.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
533	<p>Designate the following areas as closed to public mechanized (e.g., bicycles) travel (69,263 acres, Map 2–13a):</p> <ul style="list-style-type: none"> <li>• Dominguez Canyon Wilderness</li> <li>• Dominguez Canyon Wilderness Study Area</li> </ul> <p>Designate all other areas of the D-E NCA as open to cross-country mechanized (e.g., bicycles) travel (140,737 acres, Map 2–13a)</p>	<p>Designate the following areas as closed to public mechanized (e.g., bicycles) travel (91,009 acres, Map 2–13b):</p> <ul style="list-style-type: none"> <li>• Dominguez Canyon Wilderness</li> <li>• Dominguez Canyon Wilderness Study Area</li> <li>• Dominguez Addition lands with wilderness characteristics</li> <li>• Dry Fork of Escalante lands with wilderness characteristics</li> <li>• Cottonwood Creek lands with wilderness characteristics</li> <li>• Gunnison Slopes lands with wilderness characteristics</li> </ul> <p>Designate all other areas of the D-E NCA as limited to designated routes for mechanized (e.g., bicycles) travel (119,309 acres, Map 2–13b).</p>	<p>Designate the following areas as closed to public mechanized (e.g., bicycles) travel (66,193 acres, see Maps 2–13c and 2–13d ):</p> <ul style="list-style-type: none"> <li>• Dominguez Canyon Wilderness</li> </ul> <p>Designate all other areas of the D-E NCA as limited to designated routes for mechanized (e.g., bicycles) travel (144,126 acres, see Maps 2–13c and 2–13d). In these areas, allow for continued use of mechanized game carts off designated routes for game retrieval.</p>		<p>Designate the following areas as closed to public mechanized (e.g., bicycles) travel (66,193 acres, see Map 2–13p):</p> <ul style="list-style-type: none"> <li>• Dominguez Canyon Wilderness</li> </ul> <p>Designate all other areas of the D-E NCA as limited to designated routes for mechanized (e.g., bicycles) travel (144,126 acres, see Map 2–13p). In these areas, allow for continued use of mechanized game carts off designated routes for game retrieval.</p>
534	No similar action in existing RMPs.	No similar action.	<p>Designate the following area as limited to designated routes for foot and horse travel (1,585 acres, Map 2–13c):</p> <ul style="list-style-type: none"> <li>• Wilderness Zone 1</li> </ul>	No similar action.	<p>Designate the following area as limited to existing routes for horse travel (1,585 acres, Map 2–13p):</p> <ul style="list-style-type: none"> <li>• Wilderness Zone 1</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
534a	No similar action in existing RMPs.				Any land acquired by the BLM for the Dominguez-Escalante NCA will be managed under the limited classification criteria as identified in 43 CFR 8342.1, limited to existing roads and trails until a site determination and travel management plan are completed for the acquisition (43 CFR 8342.2).
535	No similar action in existing RMPs.	Close redundant routes (routes that run parallel to a preferable route) and dead-end routes (routes less than 0.5 miles long that do not lead to campsites, overlooks, facilities or developments).	Close and rehab redundant routes (routes that run parallel to a preferable route) and dead-end routes (routes less than 0.5 miles long that do not lead to campsites, overlooks, facilities or developments).		No similar action.
536	No similar action in existing RMPs.	Manage the D-E NCA's route system for consistency with adjacent public land travel designations (USFS and CPW)			Manage the D-E NCA's route system for consistency with adjacent public land travel designations (USFS and CPW).
537	Excluding county-maintained roads and administrative use, implement a seasonal closure from 12/1 to 4/30 for motorized travel in 14,716 acres within the D-E NCA (Map 2-13a, BLM 1989a).	Excluding county-maintained roads and administrative use, implement a seasonal closure for motorized and mechanized travel in the following areas to protect big game winter concentration areas and saturated soils (44,436 acres, Map 2-13b): <ul style="list-style-type: none"><li>• Gibbler Gulch</li><li>• Wagon Park</li></ul>	Excluding county-maintained roads and administrative use, implement a seasonal closure for motorized and mechanized travel in the following areas to protect big game winter concentration areas and saturated soils (63,441 acres) (Maps 2-13c and 2-13d): <ul style="list-style-type: none"><li>• Gibbler Gulch</li><li>• Wagon Park</li><li>• Sowbelly</li><li>• Upper Sawmill Mesa</li></ul>		Excluding county-maintained roads and administrative use, implement a seasonal closure for motorized and mechanized travel in the following areas to protect big game winter concentration areas (63,441 acres) (Map 2-13p): <ul style="list-style-type: none"><li>• Gibbler Gulch</li><li>• Wagon Park</li></ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
		<ul style="list-style-type: none"><li>• Sowbelly</li><li>• Upper Sawmill Mesa</li><li>• Dry Mesa</li></ul>	<ul style="list-style-type: none"><li>• Dry Mesa</li></ul>		<ul style="list-style-type: none"><li>• Sowbelly</li><li>• Upper Sawmill Mesa</li><li>• Dry Mesa</li></ul>
538	No similar action in existing RMPs.	Implement seasonal closures from December 1 to April 30 in Gibbler Gulch, Wagon Park, Sowbelly, Upper Sawmill Mesa, and Dry Mesa.	Implement seasonal closures from December 1 to April 30 in Gibbler Gulch and December 1 to May 31 in Wagon Park, Sowbelly, Upper Sawmill Mesa, and Dry Mesa. The longer seasonal closures (until May 31) would be implemented to further protect saturated soils.	Implement seasonal closures from December 1 to March 31 in Gibbler Gulch, Sowbelly, Upper Sawmill Mesa, and Dry Mesa and December 1 to April 30 in Wagon Park.	Implement seasonal closures from December 1 to April 30 in Gibbler Gulch, Wagon Park, Sowbelly, Upper Sawmill Mesa, and Dry Mesa. Exception: The Farmers Canyon route, within the seasonal closure, would remain open year-round to provide a motorized “loop” opportunity until a new route can be connected north of Farmers Canyon to divert use away from the seasonal closure area as much as practicable.
539	No similar action in existing RMPs.	Construct recreation trails consistent with the Trail Design Criteria (Appendix K).			Construct recreation trails consistent with the Trail Design Criteria (Appendix K).
540	See Appendix N (as well as Maps N-1a, N-1b, N-1c, N-1d and N-1p) for implementation-level route designations by alternative within the D-E NCA.				
541	Objective: No similar objective in existing RMPs.	Objective: Manage the D-E NCA’s route system to reduce the potential for trespass onto private land.			
542	No similar action in existing RMPs.	Close routes that dead-end at private land and that are not used as primary access for private landowners.	Close and rehab routes that dead-end at private land and that are not used as primary access for private landowners.		Consider closing and rehabilitating routes that dead-end at private land and that are not used as primary access for private landowners.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
543	No similar action in existing RMPs.	Limit motorized and mechanized travel on the following types of routes to administrative use: <ul style="list-style-type: none"> <li>Routes that end at private land and provide primary access to private property (to prevent trespass)</li> <li>Routes that end at ROW structures such as communication towers, power lines, pipelines (to prevent vandalism)</li> <li>Routes that dead-end at livestock facilities and are not needed to meet recreation objectives (to prevent vandalism and livestock harassment)</li> </ul>			Consider limiting motorized and mechanized travel on the following types of routes to administrative use: <ul style="list-style-type: none"> <li>Routes that end at private land and provide primary access to private property (to prevent trespass)</li> <li>Routes that end at ROW structures such as communication towers, power lines, pipelines and are not needed to meet recreation objectives (to prevent vandalism)</li> <li>Routes that dead-end at livestock facilities and are not needed to meet recreation objectives (to prevent vandalism and livestock harassment)</li> </ul>
544	<b>Land Tenure and Land Use Authorizations</b>				
545	<b>Goal:</b> Any new proposed facilities must be consistent with protecting the resources and values within the Conservation Area and be consistent with BLM Manual 6220 (BLM 2012b; see Appendix V). Consider allowing realty authorizations, such as right-of-way grants (ROWs) and permits, only when required for local, essential community services and when no siting alternatives exist outside the NCA.				
546	<b>Objective:</b> Respond, in a timely manner, to requests for utility authorizations on public land while considering environmental, social, economic, and interagency concerns (BLM 1987).	<b>Objective:</b> Evaluate realty authorization requests using evaluation criteria designed to protect Conservation Area resources and values. Determine whether the proposal is consistent with BLM Manual 6220, including the provision that BLM will only develop new facilities in the NCA where they are necessary for public health and safety, required under law, necessary for the exercise of valid existing rights or other non-discretionary uses, needed to prevent impacts to fragile resources, or needed to further the purposes for which the area was designated.			

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
547	<p>Manage the following areas as unsuitable for public utilities (BLM 1987) (91,327 acres, Map 2–14a; note that acres cited in BLM 1987 do not match current geographic information system (GIS) data):</p> <ul style="list-style-type: none"> <li>• 8,960 acres within the Gunnison River corridor</li> <li>• 1,000 acres within Cactus Park</li> <li>• 19,178 + 30,798 acres in Dominguez Canyon</li> </ul> <p>Manage the following areas as sensitive to public utility development (12,066 acres) (BLM 1987) (Map 2–14a):</p> <ul style="list-style-type: none"> <li>• Unawweep Canyon area</li> <li>• Bangs Canyon Area</li> </ul> <p>Encourage use of existing corridors or upgrading of existing facilities in sensitive and suitable zones (BLM 1987).</p>	<p>Manage the entire D-E NCA as a ROW exclusion area (210,012 acres, Map 2–14b), except to allow for:</p> <ul style="list-style-type: none"> <li>• Reasonable access and utilities to non-Federal property and existing ROW facilities.</li> <li>• Upgrades or modifications to existing facilities</li> </ul>	<p>Manage the entire D-E NCA as a ROW exclusion area (210,012 acres, Map 2–14b), except to allow for:</p> <ul style="list-style-type: none"> <li>• Reasonable access and utilities to non-Federal property and existing ROW facilities.</li> <li>• Upgrades or modifications to existing facilities</li> <li>• Research and monitoring</li> </ul>	<p>Manage the following areas as ROW exclusion areas (90,290 acres, Map 2–14d):</p> <ul style="list-style-type: none"> <li>• Dominguez Canyon Wilderness</li> <li>• Dominguez Canyon WSA</li> <li>• Gibbler Mountain ACEC</li> <li>• Gunnison Gravels ACEC</li> <li>• Gunnison River ACEC</li> <li>• Escalante ACEC</li> </ul> <p>Manage these exclusion areas with exceptions to allow for:</p> <ul style="list-style-type: none"> <li>• Reasonable access and utilities to non-Federal property and existing ROW facilities.</li> <li>• Upgrades or modifications to existing facilities</li> <li>• Research and monitoring</li> </ul>	<p>Manage 208,990 acres of the D-E NCA as a ROW exclusion area (Map 2–14p), except to allow for:</p> <ul style="list-style-type: none"> <li>• Reasonable access and utilities to non-Federal property and existing ROW facilities.</li> <li>• Upgrades or modifications to existing facilities</li> </ul>
548		No similar action.	No similar action.	Manage the rest of the D-E NCA as ROW avoidance (118,784 acres, Map 2–14d).	<p>Manage 1,022 acres as ROW avoidance areas. Apply special stipulations and mitigation measures while processing ROWs within these areas consistently with VRM II objectives and the purposes of the NCA:</p> <ul style="list-style-type: none"> <li>• 75-foot buffer along Highway 50 (96 acres).</li> </ul>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
					<ul style="list-style-type: none"> <li>Unaweep Canyon, ¼ mile buffer along Highway 141 within the walls of the canyon (926 acres): <ul style="list-style-type: none"> <li>Telephone/fiber optic and low voltage power lines.</li> <li>Any new above-ground facilities within the D-E NCA must be placed on wooden poles.</li> </ul> </li> </ul> <p>Applications for new ROWs will follow BLM Manual 6220 policy (Section 1.6 (E)).</p>
548a	No similar action.	No similar action.	No similar action.	No similar action.	While processing ROW renewals, in accordance with all applicable law and policy, work with holders of existing ROWs to consider new, additional, or modified terms and conditions to minimize impacts to the NCA's values.
549	The BLM shall continue to provide private landowners adequate access to inholdings in the D-E NCA (Omnibus Act).	<p>Allow for reasonable access to non-Federal property with the following limitations:</p> <ul style="list-style-type: none"> <li>All ROWs on roads administered by the BLM will be maintained according to their current classification (primitive road vs. maintained and improved, etc.) and no upgrades in classification will be permitted through ROW authorizations</li> </ul>	<p>Allow for reasonable access to non-Federal property with the following limitations:</p> <ul style="list-style-type: none"> <li>All ROWs on roads administered by the BLM will be maintained according to their current classification (primitive road vs. maintained and improved, etc.) unless an upgrade in classification would better protect natural and cultural resources</li> </ul>	<p>Allow for reasonable access to non-Federal property with the following limitations:</p> <ul style="list-style-type: none"> <li>All ROWs on roads administered by the BLM will be maintained according to their current classification (primitive road vs. maintained and improved, etc.) unless an upgrade in classification would better protect natural and cultural resources, or</li> </ul>	<p>Allow for reasonable access to non-Federal property with the following limitations:</p> <ul style="list-style-type: none"> <li>All ROWs on existing roads administered by the BLM will be maintained in their current condition unless an upgrade in condition would better protect natural and cultural resources</li> <li>Any new roads would be authorized and</li> </ul>



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
		<ul style="list-style-type: none"> <li>Any new roads that could be authorized will be constructed to minimal widths and standards similarly to nearby existing “primitive roads”</li> <li>Any new roads will be gated to prevent or limit public vehicle access</li> <li>Utilities to non-Federal property must be co-located within a 30 foot buffer of the access road to the property</li> </ul>	<ul style="list-style-type: none"> <li>Any new roads that would be authorized will be constructed in a way that minimizes impacts to natural and cultural resources</li> <li>Any new roads will be gated as needed to prevent or limit public vehicle access</li> <li>Utilities to non-Federal property must be co-located within a 40 foot buffer of the access road to the property</li> </ul>	<p>would provide recreational benefit</p> <ul style="list-style-type: none"> <li>Any new roads that would be authorized will be constructed to minimal widths and standards similarly to nearby existing “primitive roads”</li> <li>Utilities to non-Federal property must be co-located within a 50 foot buffer of the access road to the property</li> </ul>	<p>constructed in a way that minimizes impacts to natural and cultural resources</p> <ul style="list-style-type: none"> <li>Any new roads will be gated as needed to prevent or limit public vehicle access</li> <li>Utilities to non-Federal property must be co-located within a 50 foot buffer of the access road to the property, unless an exception would reduce impacts to natural and cultural resources.</li> </ul>
550	No similar action in existing RMPs.	No similar action.	Allow for the construction of research and monitoring sites in ROW exclusion areas as long as these facilities further understanding and management of the purposes of the D-E NCA.		Allow for the construction of research and monitoring sites in ROW exclusion areas as long as these facilities further understanding and management of the purposes of the D-E NCA.
551	No similar action in existing RMPs. Proposals for new developments are considered on a case-by-case basis.	Any new communications facilities must be co-located at the existing communications site in the Delta County portion of the D-E NCA.	Allow for the location of one new communications site within ROW exclusion area of the Delta or Montrose County portion of the D-E NCA. Locate this site to minimize impacts to visual, natural and cultural resources.		Allow for the location of one new communications site within ROW exclusion area of the Delta or Montrose County portion of the D-E NCA, only if a new location is necessary for improved communications coverage and leads to equivalent or better protection of visual, natural and cultural resources than co-location would.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
552	Manage the Ninemile Hill communications site in accordance with the approved Ninemile Hill communications site plan.	Continue to manage in accordance with the Ninemile Hill communications site plan with the following modifications: <ul style="list-style-type: none"> <li>• No new towers shall be constructed</li> </ul>	Continue to manage in accordance with the Ninemile Hill communications site plan, except where limitations are identified elsewhere in this plan.		Continue to manage in accordance with the Ninemile Hill communications site plan, except where limitations are identified elsewhere in this plan.
553	No similar action in existing RMPs.	Any new towers within the D-E NCA must <ul style="list-style-type: none"> <li>• Be self-supporting structures</li> <li>• Have no night lighting</li> <li>• Not be constructed to a height greater than 100 feet</li> </ul>			Any new towers within the D-E NCA must be: <ul style="list-style-type: none"> <li>• Self-supporting structures</li> <li>• No night lighting</li> <li>• No new towers to be constructed to a height greater than 100 feet</li> <li>• Construct to repeat the basic elements of form, line, color, and texture found in the predominant natural features of the adjacent landscape (see row 314).</li> </ul>
554	<b>Objective:</b> No similar objective. No utility corridors would be designated.				
555	Manage two corridors for public utilities and other facilities, including: <ul style="list-style-type: none"> <li>• West-wide Energy Corridor <ul style="list-style-type: none"> <li>○ 1-5 miles</li> </ul> </li> <li>• Unaweep Canyon <ul style="list-style-type: none"> <li>○ Telephone and small electric lines</li> </ul> </li> </ul>	No similar action.	Manage one corridor for public utilities and other facilities (926 acres): <ul style="list-style-type: none"> <li>• Unaweep Canyon <ul style="list-style-type: none"> <li>○ Telephone/fiber optic and power lines.</li> <li>○ 1/4 mile on each side of the highway ROW.</li> <li>○ Any new facilities within the D-E NCA portion of the corridor must be placed on wooden poles.</li> </ul> </li> </ul> <p>Note: Only that part of the West-wide Energy Corridor that is within the NCA would be removed. That part of</p>		No similar action. No utility corridors would be designated. <p>Note: Only that part of the West-wide Energy Corridor that is within the NCA would be removed. That part of the West-wide Energy Corridor that is outside the NCA would remain unchanged.</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
			the West-wide Energy Corridor that is outside the NCA would remain unchanged.		
556	Goal: Process land tenure adjustments to protect resource values, improve management, and reduce administration costs.				
557	<p><b>Objective:</b> Private lands, if available, may be acquired in Management Unit 1 (68,362 acres within the D-E NCA) to improve livestock grazing management or to increase crucial deer and elk winter range; Management Unit 9 (2,772 acres within the D-E NCA) to improve riparian management; and in Management Unit 11(2,312 acres within the D-E NCA) to increase waterfowl nesting habitat (BLM 1989a).</p> <p>Adjust public land patterns to consolidate public land for improved management efficiency and to acquire suitable private land with special resource values (BLM 1987).</p>	<p><b>Objective:</b> Continue to work with willing sellers to acquire non-Federal land within, and/or adjacent to, the Conservation Area boundary if the acquisition will contribute to achieving the goals and objectives for the purposes of the D-E NCA.</p>			<p><b>Objective:</b> Continue to work with willing sellers to acquire non-Federal land within, and/or adjacent to, the Conservation Area boundary if the acquisition will contribute to achieving the goals and objectives for the purposes of the D-E NCA.</p>
558	Acquire private land through exchange whenever possible rather than through purchase by the BLM (BLM 1987).	Acquire lands or interests in lands from willing sellers through exchanges, purchases, easements or donations.			Acquire lands or interests in lands from willing sellers through exchanges, purchases, easements or donations.
559	Acquired lands or interests in lands would be managed consistent with the objectives of surrounding BLM-administered lands.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
559a	No similar action in existing RMPs.				Any land acquired by the BLM for the Dominguez-Escalante NCA will be managed under the limited classification criteria as identified in 43 CFR 8342.1, limited to existing roads and trails until a site determination and travel management plan are completed for the acquisition (43 CFR 8342.2).
560	<b>Objective:</b> Resolve trespass or encroachment issues as they are identified and prioritized.				
561	Consider for exchange only private land that meets the acquisition criteria. This land lies within or adjacent to large blocks of public land or has special resource values needed by the BLM to improve resource management (BLM 1987).	Consider land exchanges on a case-by-case basis in order to resolve trespass or encroachment issues if the exchange is in the public interest.			Consider land exchanges on a case-by-case basis in order to resolve trespass or encroachment issues if the exchange is in the public interest.
562	No similar action in existing RMPs. Authorization of rights-of-way are considered on a case-by-case basis.	Resolve trespass cases through termination of the unauthorized activity, legalizing the activity under an appropriate land use authorization, or title transfer through land exchange, as appropriate.			
563	<b>Objective:</b> Manage existing withdrawals in cooperation with the identified agency (e.g., BOR) until the withdrawals are revoked.				
564	No similar action in existing RMPs.	Upon revocation of existing withdrawals, manage the lands consistent with the objectives of adjacent or comparable public lands within the D-E NCA.			Upon revocation of existing withdrawals, manage the lands consistent with the objectives of adjacent or comparable public lands within the D-E NCA.
565	Areas of Critical Environmental Concern				
566	<b>Goal:</b> Protect the integrity of sensitive and/or unique areas within the D-E NCA through the designation of ACECs.				
567	<b>Objective:</b> Protect, and educate the public about, the unique and sensitive geological resources of the Gunnison Gravels area.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
568	Manage 5 acres of the Gunnison Gravels site as an ACEC (Appendix M; Map 2–5a).	Un-designate the Gunnison Gravels ACEC.		Manage the Gunnison Gravels ACEC (15 acres) to protect evidence of unique geological processes (Appendix M; Map 2–5d).	<i>Same as Alternative D:</i> Manage the Gunnison Gravels ACEC (15 acres) to protect evidence of unique geological processes (Appendix M; Map 2–5p).
569	Manage the Gunnison Gravels ACEC with a no-surface occupancy stipulation (BLM 1987).	See geology section (row 4 of this matrix) for SSR.	See geology section (row 4) for SSR.	Prohibit surface-disturbing activities within the Gunnison Gravels ACEC (see Appendix B, Map 2–1d).	Prohibit surface-disturbing activities within the Gunnison Gravels ACEC (see Appendix B, Map 2–1p). Construct a fence to exclude motorized travel from the ACEC.
570	Close the area to mineral materials sales or free use permits (Gunnison Gravels Articles of Designation 1987).	See geology section (row 1). Collection of rocks and minerals is prohibited throughout the D-E NCA (except for legitimate scientific uses or Native American spiritual or traditional uses, for which documentation is provided to the satisfaction of the responsible management official —see D-E NCA Interim Management Plan (BLM 2010a).		Prohibit the collection of rocks and minerals within the Gunnison Gravels ACEC.	See geology section (row 1). Do not issue permits for collection of rocks in the Gunnison Gravels except where collection is intended for legitimate scientific uses or Native American spiritual or traditional uses. For these exceptions, applicants will acquire a permit from the BLM by providing documentation to the satisfaction of the responsible management official.
571	Manage the Gunnison Gravels RNA as unsuitable for public utilities (BLM 1987).	See lands and realty section (row 544). Much of the D-E NCA will be managed as a right-of-way exclusion area.			See lands and realty section (row 544). Much of the D-E NCA will be managed as a right-of-way exclusion area.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
572	<b>Objective:</b> Manage the Escalante Canyon ACEC to enhance management and protection of listed plant species and unique plant associations, and to improve the public's awareness of the recreational hazards of the Escalante potholes (BLM 1989a).	<b>Objective:</b> No similar objective	<b>Objective:</b> Same as Alternative A.	<b>Objective:</b> Protect the unique and sensitive plant, fish and wildlife resources of Escalante Canyon, while educating the public about the area's unique natural hazards, plants, wildlife, fish, geological and cultural resources.	<b>Objective:</b> Protect the unique and sensitive plant, fish and wildlife resources of Escalante Canyon, while educating the public about the area's unique natural hazards, plants, wildlife, fish, geological and cultural resources.
573	Manage 1,895 acres of Escalante Canyon as an ACEC (Appendix M; Map 2-5a).	Un-designate the Escalante Canyon ACEC.	Manage 2,281 acres of Escalante Canyon as an ACEC (Appendix M; Map 2-5c).	Manage 11,202 acres of Escalante Canyon as an ACEC and watchable wildlife area (Appendix M; Map 2-5d).	Manage 2,281 acres of Escalante Canyon as an ACEC (Appendix M; Map 2-5p).
574	Livestock grazing will continue at current levels unless studies determine threatened and endangered plant species and unique plant associations or their potential habitats are being degraded (BLM 1989a).	No similar action.	Manage livestock grazing and active movement in the Escalante Canyon ACEC so as to protect unique and sensitive plant resources.	Manage livestock grazing and active movement in the Escalante Canyon ACEC so as to protect unique and sensitive plant resources.	Manage livestock grazing in the Escalante Canyon ACEC so as to protect unique and sensitive plant resources.  To protect riparian values and unique and sensitive plants, limit livestock use in riparian areas along Escalante Creek below forks to active movement between grazing areas (for more detail, see Map 2-4p).
575	Informational signs identifying potential recreational hazards will be provided (BLM 1989a).	No similar action.	Same as Alternative A.		Informational signs identifying potential recreational hazards will be provided (BLM 1989a).
576	To prevent accidental destruction of listed species and unique plant associations, woodland harvests will not be permitted (BLM 1989a).	No similar action.	Same as Alternative A.		To prevent accidental destruction of listed species and unique plant associations, woodland harvests will not be permitted (BLM 1989a).

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
577	Manage the ACEC with a no surface occupancy stipulation. Restrict surface-disturbing activities (BLM 1989a).	No similar action.	Prohibit surface-disturbing activities within the ACEC (see Appendix B, Map 2-1c).	Apply SSR restrictions within the ACEC (see Appendix B, Map 2-2d ).	Apply SSR restrictions within the ACEC (see Appendix B, Map 2-2p).
578	Close the area to development of major utilities to prevent accidental destruction of listed species and unique plant associations, and to maintain its scenic qualities (BLM 1989a).	See lands and realty section (row 544). Much of the D-E NCA will be managed as a Right of Way exclusion area.			See lands and realty section (row 544). Much of the D-E NCA will be managed as a Right of Way exclusion area.
579	No similar action in existing RMPs.	No similar action.	No similar action.	Provide the public with outdoor classroom opportunities related to the area's unique and sensitive plants, wildlife, fish, geological and cultural resources.	Provide the public with outdoor classroom opportunities related to the area's unique and sensitive plants, wildlife, fish, geological and cultural resources.
580	No similar action in existing RMPs.	No similar action.	No similar action.	Reduce, as much as practicable, barriers to fish and wildlife movement through Escalante Canyon.	Reduce, as much as practicable, barriers to fish and wildlife movement through Escalante Canyon.
580a	Camping is limited to designated areas (BLM 1989a).	No similar action.	Prohibit camping in the ACEC.	Where the ACEC overlaps the Escalante Canyon RMA, designate campsites within the RMA. Limit overnight camping to designated campsites (outside of developed campgrounds). (see recreation section, row 466).	Where the ACEC overlaps the Escalante Canyon RMA, designate campsites within the RMA. Overnight camping limited to developed campgrounds and designated campsites (see recreation section, row 466).

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
580 b	No similar action in existing RMPs. Permit applications are assessed on a case-by-case basis.	Manage SRPs consistent with SRMA, ACEC, and Watchable Wildlife objectives. No Vending or Competitive SRPs will be issued. Low and medium impact Commercial and Organized Group SRPs will be issued (see recreation section, Lines 468–473).	No similar action.	No similar action.	Manage SRPs consistent with SRMA, ACEC, and Watchable Wildlife objectives. No Vending or Competitive SRPs will be issued. Low and medium impact Commercial and Organized Group SRPs will be issued (see recreation section, Lines 468–473).
581	<b>Objective:</b> Protect the unique and sensitive paleontological and rare plant resources within the Gibbler Mountain area.				
582	No similar action (no designation) in existing RMPs.	No similar action (no designation).	No similar action (no designation).	Designate 1,310 acres within the Gibbler Mountain area as an ACEC (Appendix M; Map 2–5d).	Designate 1,310 acres within the Gibbler Mountain area as an ACEC (Appendix M; Map 2–5p).
583	See similar action on row 152 for BLM sensitive plants throughout the NCA: Promote BLM sensitive plant conservation and reduce the likelihood and need for species to be listed pursuant to the ESA (BLM 2008d).  See row 7 for general paleontological resource protection throughout the NCA.	See similar action on row 152 for BLM sensitive plants throughout the NCA: Apply SSR restrictions within 100 meters (328 feet) of known occurrences of BLM sensitive plant species (see Appendix B, Map 2-2b ).  See row 7 for general paleontological resource protection throughout the NCA.	See similar action on row 152 for BLM sensitive plants throughout the NCA: Apply SSR restrictions within 100 meters (328 feet) of known occurrences of BLM sensitive plant species (see Appendix B, Map 2-2c).  See row 7 for general paleontological resource protection throughout the NCA.	Prohibit surface-disturbing activities within 100 meters of known, significant paleontological sites and within 200 meters of BLM sensitive plant occurrences in the Gibbler Mountain ACEC (see Appendix B, Map 2–1d).  See row 7 for general paleontological resource protection throughout the NCA.	Prohibit surface-disturbing activities within 100 meters of known, significant paleontological sites and within 100 meters of BLM sensitive plant occurrences in the Gibbler Mountain ACEC (see Appendix B, Map 2–1p).
584	No similar action in existing RMPs.	No similar action.	No similar action.	Reduce, as much as practicable, route density within 200 meters of BLM sensitive plant occurrences in the Gibbler Mountain ACEC.	<i>Same as Alternative D:</i>  Reduce, as much as practicable, route density within 200 meters of BLM sensitive plant occurrences in the Gibbler Mountain ACEC.
585	<b>Objective:</b> Protect the unique and sensitive rare plant, fish and wildlife and paleontological resources of the Gunnison River area.				



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
586	No similar action (no designation) in existing RMPs.	No similar action (no designation).	No similar action (no designation).	Designate 17,316 acres along the Gunnison River as an ACEC (Appendix M; Map 2-5d).	No similar action (no designation).
587	No similar action in existing RMPs.	No similar action.	No similar action.	Prohibit surface-disturbing activities within the Gunnison River ACEC (see Appendix B, Map 2-1d)	No similar action. (see Appendix B, Map 2-1p)
588	No similar action in existing RMPs.	No similar action.	No similar action.	Manage livestock grazing and active movement in the Gunnison River ACEC so as to protect unique and sensitive plant and wildlife resources.	No similar action.
589	No similar action in existing RMPs.	No similar action.	No similar action.	Manage the hydrological and riparian resources of the Gunnison River so as to promote delisting of federally listed fish species.	No similar action.
590	No similar action in existing RMPs.	See row 145 for comparable NCA-wide restriction for Colorado hookless cactus.	See row 145 for comparable NCA-wide restriction for Colorado hookless cactus.	Reduce, as much as practicable, route density within 200 meters of Colorado hookless cactus.	See row 154 for comparable NCA-wide restriction for Colorado hookless cactus.
591	<b>Objective:</b> Protect the unique and sensitive rare plants and paleontological resources on the benches and slopes above the Gunnison River.				
592	No similar action (no designation) in existing RMPs.	No similar action (no designation).	Designate 4,916 acres as the River Rims ACEC (Appendix M; Map 2-5c).	No similar action (no designation).	Designate 5,405 acres as the River Rims ACEC (Appendix M; Map 2-5p).
593	No similar action in existing RMPs.	No similar action.	Prohibit surface-disturbing activities within the River Rims ACEC (see Appendix B, Map 2-1c).	No similar action.	Prohibit surface-disturbing activities within the River Rims ACEC (see Appendix B, Map 2-1p).
594	No similar action in existing RMPs.	No similar action.	Manage livestock grazing and active movement in the River Rims ACEC so as to protect unique and sensitive plant resources.	No similar action.	Manage livestock grazing and active movement in the River Rims ACEC so as to protect unique and sensitive plant resources.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
595	No similar action in existing RMPs.	No similar action.	Prohibit commercial, organized group and competitive special recreation permits in the River Rims ACEC (exception: river-related permits).	No similar action.	Prohibit competitive special recreation permits in the River Rims ACEC. Allow low impact commercial and organized group special recreation permits. Commercial river outfitters would not be allowed to camp in the ACEC, but they could float through the ACEC.
596	No similar action in existing RMPs.	See row 145 for comparable NCA-wide action.	Close all BLM routes to the public within 200 meters of Colorado hookless cactus (does not cover county-maintained roads and administrative use).	See row 154 for comparable NCA-wide restriction for listed species.	Close BLM routes to the public within 200 meters of Colorado hookless cactus (does not include county-maintained roads) except the minimum necessary to provide public access to the Gunnison River and administrative access. If occurrences are identified in the future that conflict with route designations, consider reroutes to avoid cactus.
597	<b>Objective:</b> Protect the unique and sensitive rare plants and vegetative communities of Big Dominguez Canyon				
598	No similar action (no designation) in existing RMPs.	No similar action (no designation).	Designate 5,626 acres within Big Dominguez Canyon as an ACEC (Appendix M; Map 2–5c).	No similar action (no designation).	No similar action (no designation).
599	No similar action in existing RMPs.	No similar action.	Manage livestock grazing and active movement in the Big Dominguez Canyon ACEC so as to protect unique and sensitive rare plants and vegetative communities.	No similar action.	No similar action.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
600	No similar action in existing RMPs.	No similar action.	Minimize impacts to rare plants and vegetative communities from recreation use through route designation and group size limitations in this area.	No similar action.	No similar action.
601	<b>National Historic Trails</b>				
602	<b>Goal:</b> Safeguard the nature and purposes of the congressionally designated Old Spanish NHT, which are to afford the public the opportunity to connect to the trail resources and the trail story.				
603	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Manage the Old Spanish NHT Management Corridor for auto-tour (along Highway 50 and county-maintained roads) interpretive opportunities.	<b>Objective:</b> Manage the Old Spanish NHT Management Corridor targeting heritage tourists and tourism service providers that seek the recreational outcomes described below. Target the following activities: auto touring, hiking, horseback riding, and mountain bicycling.  See Appendix L for details on recreation settings in this recreation area.	<b>Objective:</b> Manage the Old Spanish NHT Management Corridor for auto-tour (along designated routes, Highway 50 and county-maintained roads) interpretive opportunities.	
604	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> No similar objective	<b>Objective:</b> No similar objective	<b>Objective:</b> Recreation Outcome Objective: within five years, and continuing throughout the life of the plan, participants in visitor/community assessments report an average 4.0 realization of the following targeted experience and benefit outcomes. (4.0 on a probability scale where: 1 = Not at all realized to 5 = totally realized).  1. Learning more about the area, connecting with the experiences of those	<b>Objective:</b> No similar objective.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
				<p>who traveled through the area in the past, enjoying frequent access to community-based recreation feature</p> <p>2. Increased appreciation of the area's cultural history, living a more outdoor-oriented lifestyle</p> <p>3. Sustainability of the community's cultural heritage, maintenance/preservation of distinctive community atmosphere, improved local recreation-tourism economy</p> <p>4. Greater support for protection of cultural and heritage resources, increased awareness and protection of recreation resources</p>	
605	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Maximize opportunities for shared Old Spanish NHT stewardship.			<b>Objective:</b> Maximize opportunities for shared Old Spanish NHT stewardship.
606	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Reduce the potential for uses that substantially interfere with the nature and purposes of the Old Spanish NHT.			<b>Objective:</b> Reduce the potential for uses that substantially interfere with the nature and purposes of the Old Spanish NHT.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
607	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Mitigate the impacts of activities that are incompatible with the purposes for which the Old Spanish NHT was established.		<b>Objective:</b> Avoid activities that are incompatible with the purposes for which the Old Spanish NHT was established.	<b>Objective:</b> Mitigate impacts of or avoid activities that are incompatible with the purposes for which the Old Spanish NHT was established.
608	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Identify and protect the historic route and historic remnants and artifacts of the Old Spanish NHT for their scientific and educational value.		<b>Objective:</b> Identify and manage the historic route and historic remnants and artifacts of the Old Spanish NHT for public use, enjoyment, and vicarious trail experiences.	<b>Objective:</b> Identify and protect the historic route and historic remnants and artifacts of the Old Spanish NHT for their scientific and educational value.
609	<b>Objective:</b> No similar objective in existing RMPs.	<b>Objective:</b> Identify and manage high potential historic sites or high potential route segments, including any additional recommended Federal Protection Components			<b>Objective:</b> Identify and manage high potential historic sites or high potential route segments, including any additional recommended Federal Protection Components.
610	No similar action in existing RMPs.	Establish a national trail management corridor comprised of 23,131 acres in the D-E NCA to be called the Old Spanish NHT Management Corridor (Map 2–17).			Establish a national trail management corridor comprised of 23,131 acres in the D-E NCA to be called the Old Spanish NHT Management Corridor (Map 2–17p).
611	No similar action in existing RMPs.	Designate the trail corridor VRM II (Exception: allow construction of facilities that support interpretive opportunities).		Designate the trail corridor VRM I (Exception: allow construction of facilities that support retracement and interpretive opportunities).	Designate the trail corridor VRM II

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
612	No similar action in existing RMPs.	Manage the trail management corridor as ROW exclusion (Map 2-14b):		Manage the trail management corridor as ROW avoidance (Map 2-14d).	Manage the trail management corridor as ROW exclusion (Map 2-14p), with the exception of a 75-foot buffer from the edge of the south-bound lane of Highway 50 within the corridor managed as ROW avoidance. Apply special stipulations and mitigation measures to this area to protect NHT resources (see Appendix B, Map 2-2p).
613	No similar action in existing RMPs.	No similar action.	No similar action.	With partners (e.g., local governments, trail organizations, user groups, service providers, tourism councils, etc.), design and construct a non-motorized trail to provide retracement opportunities within the trail corridor.	No similar action.
614	No similar action in existing RMPs.	Close redundant and dead-end routes to improve the naturalness of the trail management corridor setting.	Close and rehab redundant and dead-end routes to improve the naturalness of the trail management corridor setting.		Close and potentially rehab routes to improve the naturalness of the trail management corridor setting.
615	No similar action in existing RMPs.	No similar action.	Designate BLM routes within the trail management corridor to reduce the sights and sound of motorized travel.		No similar action.
616	No similar action in existing RMPs.	With partners (e.g., local governments, trail organizations, user groups, service providers, tourism councils, etc.), develop auto-tour interpretive opportunities (e.g., roadside kiosks, brochures, etc.).			With partners (e.g., local governments, trail organizations, user groups, service providers, tourism councils, etc.), develop auto-tour interpretive opportunities (e.g., roadside kiosks, brochures, etc.).
617	<b>Wild and Scenic Rivers</b>				
618	<b>Goal:</b> Protect the wild and scenic river values within the D-E NCA.				

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
619	<b>Objective:</b> Manage rivers and creeks found suitable for WSR designation to protect their free-flowing condition, outstandingly remarkable values (ORVs), water quality, and tentative classification, as identified in the suitability report in the final record of decision.				
620	<p>Do not make a final suitability determination for all eligible rivers and creeks. Continue to manage the following rivers and creeks as eligible for WSR designation:</p> <ul style="list-style-type: none"> <li>• Gunnison River Segment 3 (17.48 miles). Tentative classification: Recreational</li> <li>• Gunnison River Segment 1 (15.73 miles) Tentative classification: Recreational</li> <li>• Big Dominguez Creek Segment 1 (15.86 miles) Tentative classification: Wild</li> <li>• Big Dominguez Creek Segment 2 (0.78 miles) Tentative classification: Scenic</li> <li>• Little Dominguez Creek Segment 1 (13.14 miles) Tentative classification: Wild</li> <li>• Little Dominguez Creek Segment 2 (2.45 miles) Tentative classification: Scenic</li> </ul>	<p>Manage the following river/creek segments as suitable for WSR designation (9,027 acres, Map 2–15b):</p> <ul style="list-style-type: none"> <li>• Gunnison River Segment 1, Scenic classification (3,355 acres; 11.9 miles)</li> <li>• Gunnison River Segment 3, Recreational classification (1,944 acres; 7.5 miles)</li> <li>• Cottonwood Creek, Wild classification (3,728 acres; 14.1 miles)</li> </ul> <p>Release all other eligible rivers and creeks from WSR suitability consideration.</p>	<p>Manage all river and creek segments found eligible for WSR designation as suitable for WSR designation, under the classification identified in the BLM’s summary eligibility report (26,026 acres, Map 2–15c).</p>	<p>Release all river and creek segments found eligible for WSR designation from suitability and eligibility consideration (Map 2–15d).</p>	<p>Manage the following river/creek segment as suitable for WSR designation (Map 2–15p):</p> <ul style="list-style-type: none"> <li>• Cottonwood Creek, Wild Classification (3,728 acres)</li> </ul> <p>Release all other eligible rivers and creeks from further WSR studies.</p> <p>See Wild and Scenic River Suitability Report (Appendix O). Note: The BLM determination that Cottonwood Creek is suitable is a preliminary administrative determination subject to further review by the U.S. Department of the Interior. At this time, the BLM will not forward this determination to the Secretary, Congress, or the President for further review and action. If the BLM is able to obtain an alternative form of flow protection to support the vegetation outstandingly remarkable value (ORV), the BLM will recommend that action not be taken on the suitability</p>

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
	<ul style="list-style-type: none"> <li>Rose Creek (4.1 miles) Tentative classification: Wild</li> <li>Escalante Creek Segment 1 (8.45 miles) Tentative classification: Scenic</li> <li>Escalante Creek Segment 2 (8.48 miles) Tentative classification: Recreational</li> <li>Cottonwood Creek (18.27 miles) Tentative classification: Scenic</li> </ul>				determination and will change the determination to “not suitable” during the next available land use plan amendment process. Limits on allowable uses as directed in the National Conservation Area designation legislation, as well as management actions designed to protect riparian vegetation (see Lines 73–89) are sufficient to address land uses that may threaten the vegetation ORV.
621	Approve no actions altering the free-flowing condition of eligible stream segments through impoundments, channeling, or rip-rapping.	Approve no actions altering the free-flowing condition of suitable stream segments through impoundments, channeling, or rip-rapping.		No similar action.	Approve no actions altering the free-flowing condition of suitable stream segments.
622	Approve no actions that would measurably diminish a stream segment’s identified ORVs and approve no actions that would modify the setting or level of development of an eligible river segment to a degree that would change its tentative classification.	Approve no actions that would measurably diminish a stream segment’s identified ORVs and approve no actions that would modify the setting or level of development of a suitable river segment to a degree that would change its tentative classification.		No similar action.	Approve no actions that would measurably diminish a stream segment’s identified ORVs. Approve no actions that would allow modification of the setting of a suitable river segment to a degree that would change its tentative classification.
623	No similar action in existing RMPs.	Seek measures to enhance the ORVs and free-flowing condition of suitable segments.		No similar action.	Implement measures designed to enhance the ORVs, water quality, and free-flowing condition of suitable segments.
624	If Congress designates wild and scenic rivers in the D-E NCA, take additional measures to protect each segment’s ORVs, free-flowing condition and water quality until a comprehensive river management plan is completed for the WSRs.				
625	<b>Wilderness Study Areas</b>				
626	<b>Goal:</b> Preserve the wilderness character of remaining wilderness study areas.				



Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
627	<b>Objective:</b> Preserve wilderness characteristics in WSAs in accordance with non-impairment standards as defined in BLM Manual 6330— <i>Management of Wilderness Study Areas</i> (BLM 2012e), until Congress either designates these lands as wilderness or releases them for other purposes.				
628	If the WSA (3,032 acres, Map 3–36) is released by Congress, manage the released WSA lands for consistency with management of adjacent lands outside the Dominguez Canyon Wilderness.	If the WSA (3,032 acres, Map 3–36) is released by Congress, preserve any inventoried wilderness characteristics.	Same as Alternative A.		If the WSA (3,032 acres, Map 3–36) is released by Congress, manage the released WSA lands for consistency with management of adjacent lands outside the Dominguez Canyon Wilderness.  In the interim, manage the WSA to preserve wilderness characteristics in accordance with non-impairment standards. See Scenic Resources (row 310) for more specific guidance.
628a	No similar action.	No similar action.			In the response to wildfire, use Minimum Impact Suppression Tactics (MIST) to limit impact to wilderness characteristic. Only allow ground-disturbing mechanical tactics (e.g., bulldozers) if life and/or property is threatened.
629	<b>Watchable Wildlife Areas</b>				
630	<b>Goal:</b> Designate watchable wildlife areas in areas with exceptional opportunities for the public to view wildlife.				
631	<b>Objective:</b> Manage watchable wildlife areas to provide for public wildlife viewing and wildlife-related interpretation and education.				
632	No similar action in existing RMPs.	No similar action.	No similar action.	Designate the following area as a Watchable Wildlife Area (Map 2–16d): Escalante Canyon (11,202 acres)	Designate the following area as a Watchable Wildlife Area (Map 2–16p): Escalante Canyon (11,202 acres)
633	No similar action in existing RMPs.	No similar action.	No similar action.	Identify opportunities for interpretation and education (outdoor classroom) related to wildlife in Escalante Canyon.	Identify opportunities for interpretation and education (outdoor classroom) related to wildlife in Escalante Canyon.

Row	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
634	No similar action in existing RMPs.	No similar action.	No similar action.	Where feasible, complete wildlife habitat improvements to enhance fish/wildlife viewing opportunities, while maintaining protection of fish/wildlife.	Where feasible, complete wildlife habitat improvements to enhance fish/wildlife viewing opportunities, while maintaining protection of fish/wildlife.
635	No similar action in existing RMPs.	No similar action.	No similar action.	Provide facilities such as informational and interpretive signs, designated trail systems, and restrooms, as needed to provide enhanced visitor use, enjoyment, and safety. Provide adequate protection (e.g., signing, use stipulations, barricades, fences) as needed to protect sensitive species and their habitats.	Provide facilities such as informational and interpretive signs, designated trail systems, and restrooms, as needed to provide enhanced visitor use, enjoyment, and safety. Provide adequate protection (e.g., signing, use stipulations, barricades, fences) as needed to protect sensitive species and their habitats.

## 2.7. Summary of Impacts

Table 2.4 below provides a brief comparative summary of the environmental impacts associated with the proposed alternatives fully described in Chapter 4. The purpose of Chapter 4 is to analyze the impacts of proposed resource management decisions on other relevant resources. Each resource described could be affected by proposed resource management decisions. The table is organized by the affected resource in the grey horizontal header. Section citations are listed for easy reference to Chapter 4.

**Table 2.4. Impact Summary Table**

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Geological and Paleontological Resources (Section 4.3.1)				
Alternative A meets agency requirements for the protection of paleontological resources. Outstanding geologic features have no specific management actions under Alternative A; therefore, their protection would only result indirectly from application of protective measures in other resource programs. Because recreation under Alternative A would be dispersed throughout the D-E NCA, the risk for adverse impacts through unmitigated damage to resources is highest under this alternative.	Management direction under Alternative B has more protective actions than Alternative A, including specific direction to restrict or prohibit uses impacting outstanding geologic features, prohibition of uses in sensitive geologic areas, prohibition of permanent climbing anchors, and a prioritized monitoring program for surficial paleontological sites. All of these measures would avoid or reduce adverse impacts, such as damage to scientifically valuable paleontological resources or outstanding geologic features, or the loss of paleontological resources by vandalism and unlawful collecting (poaching). On the other hand, with an emphasis on natural processes and less on active management, the BLM's ability to proactively protect resources could be limited.	Alternative C would have similar impacts as Alternative B but would emphasize active management of biological and cultural resources, which would provide more incidental protection to paleontological resources and outstanding geologic features through restrictions on surface-disturbing activities. Alternative C would also include more extensive paleontological pre-construction survey requirements to PFYC Class 3 areas in addition to PFYC Class 4 and 5 areas. This would result in approximately 204,300 acres that could be surveyed for resources (approximately 94 percent of the entire D-E NCA). In addition, 10% of PFYC Class 4 and 5 areas would be inventoried. These actions would likely lead to discovering many more localities than are currently known, further expanding the scientific record for	Alternative D would have the same types of impacts as described for Alternative B. However, management direction would allow recreational (non-permitted) collecting of common invertebrate and plant fossils that would result in adverse impacts through an unknown amount of collection and possible loss of scientific data. Alternative D would require that only 5 percent of PFYC Class 4 and 5 areas be inventoried, reducing the opportunities for new discoveries from Alternative C. More areas would be managed as SRMAs or ERMAs under Alternative D than Alternatives A, B, or C, concentrating recreation in these areas. Increased recreation in these areas could lead to more surface-disturbance and risk of vandalism; however, because these risks occur in a concentrated area, the BLM is better able to	Management in the Proposed Plan Alternative would be similar to that in Alternative C, although only those Class 3 areas likely to contain high potential for scientifically significant fossils would be surveyed prior to bedrock-disturbing construction. Like Alternative C, this would likely lead to discovering more localities than are currently known, providing beneficial impacts by further expanding the scientific record for the area. The BLM would also aim to inventory 10 percent of PFYC Class 4 and 5 areas over the life of the plan, with similar beneficial impacts to the resource and to scientific knowledge as under Alternative C. The Proposed Plan Alternative would manage the most acres as ERMAs or SRMAs, resulting in similar impacts to Alternative D but over a greater area.

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
		the area and yielding beneficial impacts to the resource.	manage recreation to minimize the potential for damage.	
<b>Priority Species and Vegetation (Section 4.3.2.1)</b>				
Under Alternative A, the current trends in priority species and vegetation would continue due to the lack of comprehensive planning for all biological resources. In general, vegetation would be managed in accordance with regulations and policy. The greatest adverse impacts on vegetation would likely occur from recreation, livestock grazing and motorized vehicle use, as these would affect the largest acreage within the decision area. Overall, pinyon-juniper woodlands would be most affected by these management programs, since it has the greatest acreage within the decision area. However, when considering the proportion of vegetation communities that would be affected, sagebrush shrubland and desert shrub/saltbush communities would likely sustain the greatest impacts from BLM management. The greatest protections from adverse impacts for vegetation would occur from management for ACECs and the Dominguez Canyon Wilderness. Pinyon-juniper	Use of the process described in Appendix A as a systematic approach for resource management under Alternative B would improve management for priority species and vegetation. Adverse impacts from resource uses would be reduced, as the BLM would implement the most stringent restrictions on surface-disturbing activities (e.g., restrictions on livestock grazing in desert shrub communities). However, lack of active management under Alternative B would prevent the beneficial impacts of movement toward desired trends for many indicators that would require vegetation or weed treatments to improve. As a result, many current trends in priority habitat and vegetation communities would likely continue.  The greatest adverse impacts on vegetation would likely occur from use of unplanned ignitions, recreation management, livestock grazing, and along routes open to motorized vehicle use, as these would affect the largest acreage within the planning area. Overall,	Under Alternative C, the BLM would focus on resource protection, similarly to under Alternative B, but would add beneficial impacts from a focus on active management of resources. Alternative C would have the most ambitious priority habitat objectives and would have the greatest beneficial impact of all alternatives in improving vegetation conditions and priority habitat ratings.  The greatest adverse impacts on vegetation would occur as a result of recreation management, in areas open to grazing, and along routes open to motorized vehicle use, as these would affect the largest acreage within the planning area. Overall, pinyon-juniper woodlands would be most affected by these management programs, since it has the greatest acreage within the decision area. However, when considering the proportion of vegetation communities that would be affected, sagebrush shrubland and mountain shrub vegetation communities would likely sustain the greatest impacts from	Alternative D would have a similar management strategy as Alternative C, using restrictions on surface-disturbing activities and active management to improve vegetation conditions, although at a slower rate and lower objective rating (e.g., “good” vs. “very good”) than under Alternative C. However, there would be an increased focus on providing recreation opportunities. There would likely be beneficial impacts from improvement of priority habitat indicators, although at a slower rate than under Alternative C.  The management programs causing the greatest adverse impacts on vegetation would likely be similar to those described for Alternative C. Overall, pinyon-juniper woodlands would be most affected by these management programs, since it has the greatest acreage within the decision area. However, when considering the proportion of vegetation communities that would be affected, desert shrub/saltbush and	Management under the Proposed Plan Alternative would have fewer restrictions and less aggressive priority habitat objectives than under Alternative C but more than under Alternative D. Recreation would be a focus but not as much as under Alternative D. As a result, adverse and beneficial impacts on priority species and vegetation would fall somewhere between the two alternatives (Alternatives C and D).  The management programs causing the greatest adverse impacts on vegetation would likely be similar to those described for Alternative C. Overall, pinyon-juniper woodlands would be most affected by these management programs, since it has the greatest acreage within the decision area. However, when considering the proportion of vegetation communities that would be affected, sagebrush shrubland and mountain shrub communities would likely sustain the greatest impacts from BLM management. The management programs affording

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
and riparian communities would receive the greatest protections from these management designations.	pinyon-juniper woodlands would be most affected by these management programs, since it has the greatest acreage within the decision area. However, when considering the proportion of vegetation communities that would be affected, sagebrush shrubland and mountain shrub communities would likely sustain the greatest impacts from proposed BLM management. The greatest protections from adverse impacts for vegetation would occur from management for wilderness and biological resources, as well as prohibitions on surface-disturbing activities on 107,740 acres. Pinyon-juniper, ponderosa pine, and riparian vegetation would receive the greatest protections from these management programs.	BLM management. The greatest protections from adverse impacts for vegetation would occur from management for wilderness, ACECs, and biological resources, as well as prohibitions on surface-disturbing activities on 86,876 acres. Pinyon-juniper, desert shrub/saltbush, ponderosa pine, and riparian vegetation would receive the greatest protections from these management programs.	sagebrush shrubland communities would likely sustain the greatest impacts from BLM management. The management programs affording the greatest protections for vegetation would be similar to those described for Alternative C. Pinyon-juniper, desert shrub/saltbush, and riparian vegetation would receive the greatest protections from these management programs.	the greatest protections from adverse impacts for vegetation would be similar to those described for Alternative C. Pinyon-juniper, desert shrub/saltbush, and riparian vegetation would receive the greatest protections from these management programs.
<b>Special Status Species and Natural Communities (Section 4.3.2.2)</b>				
Impacts from BLM management under each alternative would be directly related to impacts described for priority species and vegetation, and the magnitude of impacts on special status species would depend on the acreage of habitats that would be affected and the specific locations of proposed activities. In general, the greatest adverse impacts on special status species would occur from Alternative A due to the lack of comprehensive planning. Alternative B would implement many restrictions that are not in Alternatives C, D, or the Proposed Plan Alternative. However, restrictions on habitat treatments in Alternative B would limit the BLM's control over how quickly improvements and beneficial impacts occur. Alternatives C, D, and the Proposed Plan Alternative would incorporate restrictions on activities that would disturb special status species and their habitats, as well as active management to improve habitats. Ratings would improve under these alternatives, although at different rates. Alternative C would likely provide the greatest beneficial impacts to special status species, followed by the Proposed Plan Alternative and then Alternatives B and D. However, Alternative B would result in the least adverse impact on desert bighorn sheep due to the removal of domestic sheep grazing from the D-E NCA.				
<b>Non-Special Status Fish and Wildlife (Section 4.3.2.3)</b>				

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Impacts from BLM management under each alternative would be directly related to impacts described for priority species and vegetation, and the magnitude of impacts on fish and wildlife would depend on the acreage of habitats that would be affected. In general, the greatest adverse impacts on fish and wildlife would occur from Alternatives A and B, due to the lack of comprehensive planning in Alternative A and the lack of active management for resources in Alternative B. Under both of these alternatives, current trends would continue. Alternatives C, D, and the Proposed Plan Alternative would incorporate restrictions on activities that would disturb fish and wildlife and their habitats, as well as active management to improve habitats and provide beneficial impacts. Ratings would improve under these alternatives, although at different rates. Alternative C would likely provide the greatest beneficial impacts for fish and wildlife, followed by the Proposed Plan Alternative and then Alternative D.				
<b>Noxious and Invasive Weeds (Section 4.3.2.4)</b>				
Under Alternative A, the current trends of noxious and invasive weeds would continue due to the lack of comprehensive planning for all biological resources. In general, weeds would be managed in accordance with regulations and policy only.	Use of the process described in Appendix A as a systematic approach for resource management under Alternative B would improve management for noxious and invasive weeds and provide beneficial impacts to the noxious and invasive weeds program. Adverse impacts from resource uses would be reduced, as the BLM would implement the most stringent restrictions on surface-disturbing activities. However, lack of active management under Alternative B would prevent long-term reductions in noxious and invasive weed cover. As a result, current noxious and invasive weed trends would likely continue.	Under Alternative C, the BLM would focus on resource protection, similarly to under Alternative B, although would add active management of resources. It would have the greatest beneficial impact of all alternatives in reducing noxious and invasive weeds and preventing weed introduction and spread.	Alternative D would use a similar management strategy as Alternative C, using restrictions on surface-disturbing activities and active management to reduce noxious and invasive weeds and provide beneficial impacts. However, weed objectives would be less ambitious than under Alternative C and there would be more miles of routes open to public use. As a result, although there would likely be an overall reduction in noxious and invasive weeds, it would occur at a slower rate than under Alternative C. The management program causing the greatest adverse impacts in spreading/maintaining noxious and invasive weeds would likely be transportation and travel management.	Management under the Proposed Plan Alternative would have fewer restrictions and less aggressive priority habitat objectives than under Alternative C but more than under Alternative D. As a result, both the reduction and the spread of weeds would fall somewhere between the two alternatives. The management programs causing the greatest adverse impacts in spreading/maintaining noxious and invasive weeds would likely be transportation and travel management.
<b>Fire and Fuels (Section 4.3.2.5)</b>				

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Current management under Alternative A would limit the fire and fuel program's ability to mitigate against unplanned, damaging fires, because this alternative emphasizes full suppression on the portion of the decision area previously managed as part of the Grand Junction Field Office and because only a limited number of hazardous fuel projects have occurred in higher elevations on the northwest portion of the decision area. This would lead to adverse impacts for fire and fuels.	Under Alternative B, the overall impact would be a decrease in the fire and fuel program's flexibility and efficiency in mitigating against unplanned, damaging fires, because Alternative B would only allow minimal manipulation of fire and fuels and would prohibit vegetation treatments. This could lead to adverse impacts by limiting agency responses to unplanned wildland fire. Also, the lack of post-fire rehabilitation under this alternative could lead to significant cheatgrass ( <i>Bromus tectorum</i> ) conversion issues as described under Priority Habitat and Vegetation. This would lead to adverse impacts by moving FRCC away from the natural range of variability	Alternatives C and D, despite allowing unplanned ignitions for multiple objectives (including resource benefit) on fewer acres (182,420 and 169,893 acres, respectively), would emphasize a suite of fuel treatments (mechanical, chemical, and biological) and would provide the most management flexibility of any alternatives, resulting in reduced large fire costs and beneficial impacts.		The Proposed Plan Alternative proposes the same management flexibility and efficiency in mitigating against unplanned, damaging fires as under Alternatives C and D. In addition, the Proposed Plan Alternative, by allowing natural unplanned ignitions to be managed for multiple objectives within the largest area of the NCA in comparison to other alternatives (208,568 acres), would result in the highest potential to a) limit future large fire costs and b) enable fire to play a critical role in the ecosystem.
Soils and Water Quality (Section 4.3.2.6)				
Under Alternative A, adverse impacts on soils and water would persist as-is due to the continuation of current management actions. The greatest adverse impacts on soils and water would be from livestock grazing, recreation, and motorized vehicle use. The continuing management of ACECs would help protect soil and water resources and yield beneficial impacts. However, the other alternatives would most likely provide greater protection	The lack of active management under Alternative B would limit damages to soils and water but would also limit rehabilitation actions that could improve conditions. Under Alternative B, the exclusion of livestock grazing from riparian areas along with opening the fewest acres for grazing would allow for greater beneficial impacts to soils and water. The protection of lands with wilderness characteristics would	Alternative C would provide the most beneficial impacts to soil and water resources due to its ambitious biological objectives and emphasis on restoration using an active management approach. Livestock grazing would be intensively managed to help move toward "very good" conditions as defined for priority species and vegetation and recreation would have little adverse impact on soils and	Under Alternative D, the most acres would be managed as SRMAs and the most acres would be open to livestock grazing, which could adversely impact the largest area of soils and vegetation and, therefore, water resources. Alternative D also contains active management actions for rehabilitating environmental conditions that influence water resources and providing beneficial impacts, although	The management objectives for biological resources in the Proposed Plan Alternative would be less ambitious than Alternative C but would likely provide more beneficial impacts to soil and water resources than Alternatives A, B, and D because of the suite of management actions aimed at improving indicator ratings found in Appendix A. The protection of some lands with wilderness characteristics would have a beneficial

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
for soil and water resources due to the implementation of additional limitations on surface disturbance and ROWs, route closures, and BMPs.	have a beneficial impact on soils and water .	water quality in this alternatives.	fewer than Alternative C.	impact on soils and water.
<b>Cultural Resources (Section 4.3.3)</b>				
Under Alternative A, protections of cultural resources and some vegetation communities (which can have special significance in Native American cultures) would provide protections to sensitive cultural sites from adverse impacts. Continued consultation and cooperation with the State Historic Preservation Office and Native American tribes would allow continued compilation of information on cultural properties and cultural landscapes allowing better future management and protections of these sensitive areas. Trends in the area indicate that recreational use in the area could lead to increases in the types of impacts as discussed from this use; however, Alternative A would lack focused recreation management, leading to increased adverse impacts on tribal resources. Alternative A does not propose focusing recreation management, resulting in a greater risk for cultural	Alternative B emphasizes natural processes and favors management actions that restrict allowable uses, limit public access, and rely on natural processes. These are actions that often inadvertently provide protections for cultural resources from adverse impacts. However, the lack of active management under Alternative B also could limit the BLM's ability to proactively protect cultural resources from adverse impacts, particularly in situations where they are endangered by fire.	Overall, Alternative C would use active management for cultural resources in order to protect them from vandalism and other adverse impacts. However, many of the protections that would be used under Alternative C would also limit public access and exposure to cultural resources. Although this would preserve the resources, the trade-off would be that the public would have less exposure to the resources. Although allowing greater access to cultural resources does present a risk of adverse impacts to the resources themselves, it also enables a sense of stewardship to emerge in the public that could result in beneficial impacts to cultural resources through greater public understanding and care.	Alternative D emphasizes recreation. This emphasis could lead to adverse impacts on cultural resources due to increased public access to the D-E NCA and a wide range of allowable uses. In general, this alternative has fewer protective measures for cultural resources than the other alternatives.	The Proposed Plan Alternative combines aspects of the other alternatives. Although it is similar to Alternative D in its focus on recreation objectives, and in many cases takes the middle ground between Alternatives D and B, it also has many similarities to Alternative C with respect to management actions that would impact cultural resources. Although the Proposed Plan Alternative is not as ambitious as Alternative C as far as active cultural resource management is concerned, it would passively protect cultural resources from adverse impacts through protective measures, similarly to Alternative B.



Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
resource damage due to fewer protective measures such as limiting access, providing educational opportunities, and limiting overnight camping. There would also continue to be many routes open to public use, which would result in adverse impacts in the form of continued vandalism to cultural sites. Also, the lack of prohibitions and limitations on surface-disturbing activities would continue to result in adverse impacts to cultural resources.				
<b>Wilderness (Section 4.3.4)</b>				
Alternative A would not provide management guidance regarding decisions involving trade-offs between wilderness values, which would result in conflicting and inconsistent management of the Wilderness. Under Alternative A, untrammeled character and naturalness would remain relatively stable. This alternative would result in adverse impacts to undeveloped character due to new proposed developments. The health of unique and supplemental values would remain relatively stable.  In general, Alternatives A and B would be the least restrictive of visitor use. This would	Alternative B would result in beneficial impacts to untrammeled character. Naturalness of the Wilderness would remain relatively stable due to a hands-off management approach. Undeveloped character of the Wilderness would remain stable due to restrictions on new developments. This alternative would result in beneficial impacts to unique and supplemental values.  In general, Alternatives A and B would be the least restrictive of visitor use. This would protect outstanding opportunities for primitive and unconfined recreation but result in adverse impacts to outstanding	Under Alternative C, untrammeled character would remain relatively stable. This alternative would result in the most beneficial impacts to naturalness due to ambitious objectives for indicators in Appendix G. This alternative would result in adverse impacts to undeveloped character due to the construction of catchments for livestock within the Wilderness. This alternative would result in beneficial impacts to unique and supplemental values.  Alternative C would implement the most visitor use restrictions to protect or enhance opportunities for solitude. This would result in beneficial impacts	Alternative D would result in minor beneficial impacts to untrammeled character. Naturalness of the Wilderness would remain relatively stable with some improvements due to objectives established for indicators in Appendix G. This alternative would result in adverse impacts to undeveloped character due to the construction of catchments for livestock within the Wilderness. The health of unique and supplemental values would remain relatively stable.  Alternative D and the Proposed Plan Alternative would implement some visitor use restrictions. This would result in beneficial impacts	Under the Proposed Plan Alternative, the untrammeled character would remain relatively stable. This alternative would result in beneficial impacts to naturalness due to relatively ambitious objectives for indicators in Appendix G; however, in order to improve the balance between active management and the untrammeled character of the Wilderness, active management would not be implemented for biological indicators in “good” or “very good” condition. This alternative would result in adverse impacts to the undeveloped character due to the construction of catchments for

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
protect outstanding opportunities for primitive and unconfined recreation but would result in adverse impacts to outstanding opportunities for solitude.	opportunities for solitude.	to the wilderness characteristic of outstanding opportunities for solitude, and adverse impacts to outstanding opportunities for primitive and unconfined recreation.	to outstanding opportunities for solitude in Wilderness Zone 2 and beneficial impacts to outstanding opportunities for primitive and unconfined recreation in Wilderness Zone 3.	livestock within the Wilderness, although there would be fewer new developments than under Alternatives C and D. The health of unique and supplemental values would remain relatively stable.  Alternatives D and the Proposed Plan Alternative would implement some visitor use restrictions. This would result in beneficial impacts to outstanding opportunities for solitude in Wilderness Zone 2 and beneficial impacts to outstanding opportunities for primitive and unconfined recreation in Wilderness Zone 3.
<b>Lands with Wilderness Characteristics (outside Dominguez Canyon Wilderness and Remaining WSAs (Section 4.3.5))</b>				
Alternative B would, over the long term, result in the most beneficial impacts for the wilderness characteristics on lands with those characteristics, because Alternative B would specifically protect all lands with wilderness characteristics. Alternatives A, C, and D would not directly preserve wilderness characteristics, so any protection of wilderness characteristics would only occur indirectly from other resource management, notably recreation decisions and restrictions on surface-disturbing activities. Under Alternatives A, C, and D, some areas with wilderness characteristics would experience adverse impacts. Under the Proposed Plan Alternative, two of the four units inventoried to contain wilderness characteristics (Dry Fork of Escalante and Cottonwood Canyon) would be managed for protection of their wilderness characteristics. In those two areas, impacts would be similar to those described for Alternative B. In the two other areas (Dominguez Addition and Gunnison Slopes), impacts would be similar to those described for Alternatives A, C, and D.				
<b>Scenic Resources (Section 4.3.6)</b>				
Alternative A provides the least amount of protection from adverse impacts to scenic values within the D-E NCA. Nearly half of the lands would be managed according to VRM Class III objectives, including 81,629 acres of high sensitivity landscapes and 4,857 acres of scenic quality "A"	Alternative B would protect the most lands from adverse impacts by managing approximately 45 percent of the D-E NCA as VRM Class I and an additional 24 percent of VRM Class II lands would prohibit surface-disturbing activities that might otherwise cause visual intrusions on the	Under Alternative C, approximately 34 percent of the D-E NCA would be managed as VRM Class I and an additional 27 percent of VRM Class II lands would prohibit surface-disturbing activities that might otherwise cause visual intrusions on the landscape. Of	Alternative D would protect the most lands as VRM Class I (51 percent) and would protect an additional 10 percent of VRM Class II lands by prohibiting surface-disturbing activities that might otherwise cause visual intrusions on the landscape. Of the lands managed as	Under the Proposed Plan Alternative, approximately 40 percent of the D-E NCA would be managed as VRM Class I and an additional 11 percent of VRM Class II lands would prohibit surface-disturbing activities that might otherwise cause adverse impacts. This

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
landscapes, allowing modifications to the landscape that attract attention but do not dominate the view of the casual observer.	landscape. Of the lands managed as VRM Class II, 94,846 acres (82 percent) are high sensitivity landscapes and 8,314 acres (7 percent) have a scenic quality ranking of "A."	the lands managed as VRM Class II, 115,257 acres (84 percent) are high sensitivity landscapes and 13,302 acres (10 percent) have a scenic quality ranking of "A."	VRM Class II, 91,690 acres (90 percent) are high sensitivity landscapes and 3,747 acres (4 percent) have a scenic quality ranking of "A."	combination provides the least amount of protection to scenic values of any of the action alternatives, although all actions must adhere to either VRM Class I or II objectives that would protect the scenic quality of the D-E NCA. Of the lands managed as VRM Class II, 105,457 acres (83 percent) are high sensitivity landscapes and 13,737 acres (11 percent) have a scenic quality ranking of "A."
<b>Air Resources, Including Climate Change (Section 4.3.7)</b>				
Estimated emissions for Alternative A (No Action Alternative) increase from the base year for all pollutants except methane. This can be attributed to the predicted growth of 3% per year in off-highway vehicle (OHV) recreational activities associated with the management decisions of the plan.	Total criteria emissions for Alternative B are estimated to be essentially the same as those for Alternative A, while greenhouse gas (GHG) emissions are cut by almost a third due to more restrictive grazing decisions.	Total criteria emissions for Alternative C decrease considerably due to estimated reductions in OHV usage, which make up a majority of the criteria pollutant emissions under all alternatives. GHG emissions are cut slightly due to minor restrictions within grazing allotments.	Total criteria emissions for Alternative D are consistent with the resource impact decisions made for Alternative A. Although the BLM estimates increased OHV usage in the Cactus Park and Ninemile Hill SRMAs in this alternative, this increased usage would offset decreased usage in other parts of the NCA that would be managed for non-OHV recreation. GHG emissions increase slightly due to minor changes to grazing allotments.	Total criteria emissions for the Proposed Plan Alternative are consistent with the resource impact decisions made for Alternative A. GHG emissions are cut slightly due to minor restrictions within grazing allotments.
<b>Recreational Use(Section 4.4.1)</b>				

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Under Alternative A, there would be no designated RMAs. The results of management specific to SRMAs and ERMAs would not be expected. There would be no protection of recreation settings, activities, and outcome opportunities. Over time, recreation opportunities would be lost where recreation conflicts with other recreation users and resource uses, primarily livestock grazing and lands and realty. Seasonal crowding at attractions may change user enjoyment of the area, because use exceeds management capability.	Under Alternative B, a large portion of the D-E NCA would be designated as an ERMA, where principal recreation activities would be protected and supported and where recreation would be managed commensurate with other resources. There would be no SRMA management; therefore, recreation outcomes would not be protected under this alternative. Over time, specific valued outcomes desired by current visitors, service providers, and affected communities may not be available. However, opportunities for a variety of recreation activities would be protected. Recreation management actions to protect and provide recreation activity opportunity (trail design, construction, maintenance, and access points) would help mitigate conflict among user groups, between other resource uses, and with important biological and cultural resources. Restricting recreation throughout the D-E NCA to meet cultural and biological resource objectives would reduce opportunities to participate in recreation activities, or to enjoy the expected recreation setting, more than under Alternative A.	Under Alternative C, recreation decisions to designate two SRMAs (Cactus Park and Gunnison River) would provide long term protection of specific recreation outcomes and settings in those areas. However, other recreation outcomes would not be protected in these areas. Throughout the remaining areas of the D-E NCA, recreation would be managed without RMA designation and impacts would be the same as under Alternative A. Over time, recreation opportunities would be lost where recreation conflicts with other resource uses, primarily livestock grazing and lands and realty. Due to more ambitious biological and cultural objectives under Alternative C, restrictions on recreation activities would be greater than under any other alternative; further reducing opportunities to participate in recreation activities, or to enjoy the expected recreation setting.	Under Alternative D, the D-E NCA (except the Dominguez Canyon Wilderness area) would be designated as RMAs. The Sawmill Mesa/Wagon Park area would be managed as an ERMA. The remaining areas would be managed as SRMAs, which would provide targeted experiences and outcomes that benefit some users while displacing others who are seeking different experiences and outcomes. Designating a large portion of the D-E NCA as SRMAs would provide long term protection of specific recreation outcomes and settings in much of the D-E NCA, and recreation activities would be protected throughout the remaining areas of the D-E NCA. Due to less ambitious biological and cultural objectives under Alternative D, restrictions on recreation activities would be fewer than Alternatives B and C.	Under the Proposed Plan Alternative, a large portion of the D-E NCA would be designated as an ERMA (Hunting Ground, Ninemile Hill, East Creek, and Sawmill Mesa/Wagon Park), where principal recreation activities would be protected and supported and where recreation would be managed commensurate with other resources. Three other areas (Cactus Park, Gunnison River, and Escalante Canyon) would be managed as SRMAs, which would provide targeted experiences and outcomes that benefit some users while displacing others who are seeking different experiences and outcomes. Designating a large portion of the D-E NCA as an ERMA would protect and support recreation activities in those areas; however, specific recreation outcomes and settings would only be protected in the smaller portion of the D-E NCA designated as an SRMA. Like Alternative D, less ambitious biological and cultural objectives under the Proposed Plan Alternative would result in fewer restrictions on recreation activities than Alternatives B and C.

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Scientific Use (Section 4.4.2)				
Implementing any alternative would result in beneficial impacts to science, but the action alternatives (Alternatives B through the Proposed Plan Alternative) contain more specific management actions that would better direct scientific research and more effectively protect this resource. Alternative C contains the greatest number of resources and uses with an emphasis on internal research and accessing external resources, resulting in a more intensive, hands-on scientific approach. Impacts under Alternatives D and the Proposed Plan Alternative would be similar to those under Alternative C. Across all resources and uses, Alternative B places the least emphasis on intensive or resource-disturbing research of any action alternative. This alternative would result in adverse impacts to scientific use. The Proposed Plan Alternative places the most broad emphasis on improving understanding of the NCA from a social science perspective, with a focus not only on recreation (as in the other action alternatives), but also social and economic non-market and market values.				
Educational Use (Section 4.4.3)				
Alternatives A and B would provide only a minimal amount of facilities or opportunities for learning (notably, livestock grazing and cultural resources management contain some education emphasis). These two alternatives would result in the fewest beneficial impacts to educational use.		There would be little difference in impacts between Alternatives C, D, and the Proposed Plan Alternative. All three alternatives would provide the most beneficial impacts by promoting opportunities for education through the development of educational facilities and outdoor classroom opportunities. Alternative D would manage the most areas for interpretation of natural, geological, and cultural resources, making it the alternative with the greatest beneficial impact on educational use.		
Livestock Grazing (Section 4.4.4)				
Under Alternative A, impacts would generally occur on a case-by-case basis and limitations would apply where land is found to not meet the BLM’s standards for public land health. Site-specific conflicts with protection of water, soils, and vegetation, as well as recreation management, would be possible. Adjustments to management of livestock grazing would be made on the basis of resource condition or conflicts and monitoring results. This alternative would result in few adverse impacts to the livestock grazing program.	Adverse impacts on costs to permittees would be the greatest under Alternative B due to the most restrictive limitations on grazing locations, utilization levels, season of use, and type of livestock allowed. Under this alternative, areas closed to all livestock grazing would be increased due to restrictions to meet cultural and biological resource objectives. Of particular note are closures for allotments within the sensitive salt desert shrub plant community, in Rose Creek and Upper Escalante Creek, or for protection of riparian habitat. Also, no domestic sheep grazing would be allowed and impacts on those permittees would be the highest under this alternative. Furthermore, any additional	Under Alternative C, livestock grazing would be intensively managed to help achieve “very good” condition as defined in Appendix A. AUMs could be reduced, or other limitations applied that would increase time and cost to permittees if vegetation treatments or intensive management are insufficient to achieve biological resource objectives. Of note are limitations within Colorado hookless cactus habitat and priority vegetation habitat under Alternative C that could result in adverse impacts to livestock grazing. Some closures would occur, limiting grazing in biologically sensitive areas, including Rose Creek. Domestic sheep grazing would be prohibited in allotments where	Under Alternative D, the most land would be open to livestock grazing, and fewer restrictions would generally apply. AUMs could be reduced or limitations put into place to achieve biological and recreation resource objectives, resulting in increased costs or time for permittees, but at a lower level than the other action alternatives. Impacts from recreation would be possible from SRMA management, which covers the largest acreage under this alternative, although measures to reduce conflict would still be in place. This Alternative would result in the fewest adverse impacts to livestock grazing of the four action alternatives.	The Proposed Plan Alternative would implement a moderate amount of restrictions on grazing relative to other action alternatives. AUMs could be reduced if intensive management or vegetation treatments are insufficient to achieve biological and cultural resource objectives. These limitations on livestock grazing would result in adverse impacts to permittees. For permittees grazing sheep, mitigation measures would be adopted to reduce the risk of disease transmission between domestic sheep and goats and desert bighorn sheep, with some adverse impacts on permittees, but less than those in Alternatives B or C.

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
	forage created by management actions in this alternative could not be allocated to livestock.	conflicts with bighorn sheep are highly likely to occur, resulting in adverse impacts for those permittees.		
<b>Transportation and Travel Management (Section 4.4.5)</b>				
As a supportive function, transportation and travel management is not impacted by other resources and resource uses. Instead, transportation and travel management decisions impact other resources and resource uses. These impacts are discussed in those particular resource sections of this chapter.				
<b>Land Tenure and Land Use Authorizations (Section 4.4.6)</b>				
Alternative A would provide the most opportunities for the BLM to authorize land uses, and thus the most beneficial impacts to the Land Tenure and Land Use Authorizations program. Alternative A would manage the fewest acres as unsuitable for public utilities, providing the most opportunities for location of ROWs, access, and facilities. In addition, the fewest number of acres are managed as VRM Class I, the VRM designation that would most severely limit opportunities for land use authorizations and is also the only alternative with VRM Class III designations, which would provide the greatest opportunities for land use authorizations that don't need to meet strict VRM class objectives. However, the most miles of routes would be available for public use under this alternative, which increases opportunities for adverse impacts from trespass of, and vandalism to, private	Alternative B would be the most restrictive on land use authorizations, providing the most adverse impacts in the form of ROW exclusion, and with the fewest exceptions. On the other hand, opportunities for land exchanges would be the greatest under this alternative as no areas would be designated as ACECs and the portion of the Gunnison River with the most fragmented land pattern would be determined not suitable for inclusion in the National Wild and Scenic Rivers System (NWSRS) and released from interim protective management. Fewer miles of routes would be designated for public use than under Alternative A, although similarly to under Alternative D and the Proposed Plan Alternative, decreasing opportunities for adverse impacts from trespass and vandalism.	Under Alternative C, the entire NCA would be managed as a ROW exclusion area, with some exceptions (see Chapter 2). This would have similar adverse impacts as those described for Alternative B. This alternative would manage the fewest acres as VRM Class I of any of the action alternatives (Alternatives B through the Proposed Plan Alternative). Alternative C would close the most miles of routes to public use but would designate the most miles of routes for administrative use, ensuring access to private property and reducing the possibility for adverse impacts from trespass, vandalism, and access to safety hazards. On the other hand, Alternative C would offer the fewest opportunities for land exchanges in areas with highly fragmented land patterns as both the Gunnison River and Escalante Creek would be determined suitable for inclusion in the NWSRS and	Alternative D would be the least restrictive and would have the fewest adverse impacts for new land use authorizations of the action alternatives. More than half of the D-E NCA would be managed as ROW avoidance instead of complete ROW exclusion. However, this alternative would also manage the most acres as VRM Class I and where ROW avoidance areas overlap VRM Class I, opportunities for land use authorizations would be limited in much the same way as ROW exclusion. Impacts from travel management would be similar to those under Alternatives B and the Proposed Plan Alternative. Although all WSR study segments would be determined not suitable for inclusion in the NWSRS and released from interim protective management, Alternative D would designate the largest area of the Escalante Canyon and Gunnison River ACECs, offering the most restrictions on	Overall, impacts on land use authorization under the Proposed Plan Alternative would be similar to those under Alternative C, although more acres would be managed as VRM Class I. Impacts from travel management would be similar to those under Alternatives B and D.

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
property and existing facilities.		Escalante Canyon and River Rims would be designated as ACECs.	the BLM's ability to engage in land exchanges.	
<b>Areas of Critical Environmental Concern (Section 4.5.1)</b>				
Outdated ACEC management under Alternative A would provide limited protection from adverse impacts for the relevant and important values within ACECs. In potential ACECs containing rare plants (all ACECs except the Gunnison Gravels ACEC), some limitations on livestock grazing to active movement only would provide additional beneficial impacts.	Under Alternative B, no ACECs would be proposed for designation, but these areas would still receive protection for their relevant and important values from restrictions on uses throughout the D-E NCA. Primary drivers of beneficial impacts would include expanded restrictions and prohibitions on surface-disturbing activities. In potential ACECs containing rare plants (all ACECs except the Gunnison Gravels ACEC), closing areas to livestock grazing, limiting grazing to active movement only in some riparian areas, and eliminating domestic goat and sheep grazing would provide additional protections from adverse impacts.	Active management to achieve biological objectives within the D-E NCA would provide incidental protections from adverse impacts. Special management within ACECs proposed for designation would be targeted to protect their relevant and important values. Restrictions on surface-disturbing activities would offer beneficial impacts for nearly all potential ACECs not proposed for designation. In ACECs containing rare plants (all ACECs except the Gunnison Gravels ACEC), limiting livestock grazing to active movement only on 4,662 acres of potential ACECs not designated under this alternative would provide additional protections from adverse impacts.	Impacts on ACECs under Alternative D would be similar to those under Alternative C; however, active management to achieve biological objectives under this alternative would be somewhat less ambitious than that under Alternative C and there would be fewer restrictions on uses in this alternative than in Alternatives B and C. However, Alternative D would propose the most acres for ACEC designation, offering special management that would protect the most relevant and important values from adverse impacts.	Overall, impacts on ACECs under the Proposed Plan Alternative would be similar to those under Alternative C, but active management to achieve biological objectives would occur in a less ambitious manner. The Proposed Plan Alternative would propose the second-fewest acres for ACEC designation behind Alternatives A and B. Application of restrictions on surface-disturbing activities would offer protection for ACEC values from adverse impacts in both designated and undesignated ACECs. In portions of the Escalante ACEC, limiting livestock grazing to active movement only would provide additional protections from adverse impacts.
<b>National Trails (Section 4.5.2)</b>				
Under Alternative A, the lack of restrictions that limit surface disturbance or protect the viewsheds surrounding the Old Spanish NHT could hamper protecting the trail's footprint and result in adverse impacts to the trail's visual setting. In addition, the unmanaged nature of recreation under this alternative would lead	Unlike Alternative A, the designation of a trail management corridor under all action alternatives would protect (to varying extents) the trail's viewshed and protect the trail from adverse impacts. All four action alternatives would also improve opportunities for trail-related education	Unlike Alternative A, the designation of a trail management corridor under all action alternatives would protect (to varying extents) the trail's viewshed and protect the trail from adverse impacts. All four action alternatives would also improve opportunities for trail-related education and recreation to varying extents.  Under Alternatives C and D, the BLM would designate a much wider trail management corridor (23,131 acres). As for Alternative B and the Proposed Plan Alternative, the BLM would take actions to protect the trail management corridor from adverse impacts and provide education and interpretation	Same as Alternative B, although management would retain flexibility to avoid actions incompatible with the purposes for which the Old Spanish NHT was established, which could result in greater protection of the historic setting in comparison to Alternative B.	

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
to adverse impacts to trail resources. Lack of active trail management under this alternative would also fail to provide opportunities for trail-related education and recreation.	and recreation to varying extents.  Under Alternatives B and the Proposed Plan Alternative, the BLM would designate 23,131 acres as the trail management corridor, with specific actions to protect the trail footprint and surrounding landscapes from adverse impacts. Implementation of an interpretation and environmental education program under Alternative B would enhance awareness and appreciation of the Old Spanish NHT, resulting in beneficial impacts. However, management of a narrow corridor and the presence of forms of recreation in the Hunting Ground that are incompatible with retracement would limit opportunities for trail-related education and interpretation and the ability to protect the nature and purpose of the trail (affording the public the opportunity to connect to the trail resources and the trail story).	opportunities that would enhance awareness and appreciation of the Old Spanish NHT, resulting in beneficial impacts. The designation of a larger corridor under these two alternatives would result in more opportunities for Trail-related recreation and education than under Alternative B and the Proposed Plan Alternative. Under Alternative D, management of the Hunting Ground for retracement and auto-tours as well as managing the corridor as VRM Class I would result in the greatest opportunities for trail-related education and recreation and to protect the nature and purpose of the trail (affording the public the opportunity to connect to the trail resources and the trail story). However, this management approach would lead to increased public awareness that could result in adverse impacts from additional vandalism and unauthorized collection of NHT resources.		
<b>Wild and Scenic Rivers (Section 4.5.3)</b>				



Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Alternatives A and C would provide the most protection for eligible or suitable WSR segments from adverse impacts, because all segments would be managed as either eligible or suitable and the BLM would take no action that would impair the free-flowing condition, tentative classification, or ORVs of the segments.	Alternative B would determine three segments to be suitable for inclusion in the NWSRS, and would provide the same protections to those segments from adverse impacts as under Alternatives A and C but over a smaller area. Of the alternatives where segments were determined not suitable for inclusion in the NWSRS, Alternative B would provide the most opportunities for protections from adverse impacts through restrictions on surface-disturbing activities. On the other hand, because Alternative B emphasizes natural processes over hands-on management, the BLM's ability to respond to land health issues could be reduced under this alternative.	Alternatives A and C would provide the most protection for eligible or suitable WSR segments from adverse impacts, because all segments would be managed as either eligible or suitable and the BLM would take no action that would impair the free-flowing condition, tentative classification, or ORVs of the segments.	The BLM would not determine any segments suitable for inclusion in the NWSRS, allowing for some adverse impacts to currently eligible river/creek segments. Alternative D would provide a fair amount of protection from adverse impacts for segments determined not suitable for inclusion in the NWSRS through restrictions on surface-disturbing activities and ACEC designations that overlap stream segments. Impacts would be similar to those under Alternative B, but because the BLM would take a more active approach to land management and restoration, there is greater potential for adverse impacts to biological ORVs to be mitigated under this alternative.	The Proposed Plan Alternative would determine one segment to be suitable for inclusion in the NWSRS, and would provide the same protections to those segments from adverse impacts as under Alternatives A and C but over a smaller area. The Proposed Plan Alternative would provide the least amount of protection from adverse impacts to the segments, regardless of suitability determination, as the fewest acres would be protected by restrictions on surface-disturbing activities. Impacts would be similar to those under Alternative B but the area of overlapping protection would be reduced under this alternative.
<b>Wilderness Study Areas (Section 4.5.4)</b>				
Overall, impacts on the WSA would be similar under all alternatives, because the Interim Management Policy protects the WSA's wilderness characteristics in a non-impairment manner. The main difference between alternatives would be if the WSA were released by Congress from wilderness consideration. Under Alternative B, if the WSA were released, wilderness characteristics in the released WSA would be preserved for the long term, because Alternative B would protect lands with wilderness characteristics and would prohibit motorized and mechanized travel. Alternatives A, C, D, and the Proposed Plan Alternative would not preserve wilderness characteristics in the WSA if the WSA were released, so any protection of wilderness characteristics would only occur indirectly from other resource management, primarily from Transportation and Travel Management decisions. Alternative C's Transportation and Travel Management decisions would include more indirect protection of wilderness characteristics than Alternatives A, D, and the Proposed Plan Alternative should the WSA be released.				
<b>Watchable Wildlife Areas (Section 4.5.5)</b>				
In general, the types of impacts under Alternatives A, B, and C would be similar due to the lack of a watchable wildlife area designation in the decision area. However, under Alternatives D and the Proposed Plan Alternative, designating the Escalante Canyon Watchable Wildlife Area—with supporting actions designed to facilitate viewing opportunities and protect wildlife habitat—would provide the greatest beneficial impacts.				
<b>Tribal Interests (Section 4.6.1)</b>				

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Alternative A would continue to limit protection of cultural resources to enforcement of Federal law and BLM policy. Continued consultation and cooperation with Native American tribes would allow continued compilation of information on traditional cultural properties, sacred sites, and cultural landscapes allowing better future management and protections of these sensitive areas from adverse impacts.	Under Alternative B, protections of cultural resources and some vegetation communities (which can have special significance in Native American cultures) would provide protections to traditional use areas and tribal sensitive sites from adverse impacts (similar actions would occur under Alternatives C, D, and the Proposed Plan Alternative). Continued consultation and cooperation with Native American tribes would allow continued compilation of information on traditional cultural properties, sacred sites, and cultural landscapes allowing better future management and protections of these sensitive areas. Alternative B would prohibit collection of plant materials except for use by Native American tribal members. This would continue to allow access into those traditional use areas for resource collection and eliminate competition from commercial plant collectors that may target the same resources.	Impacts under Alternative C would be nearly the same as Alternative B, but more active management would increase the possibility of change on the landscape that could modify and beneficially impact sensitive tribal resources. Route closures under this alternative would be the greatest, resulting in adverse impacts on access from tribal members.	Under Alternative D, the planning area has more areas in VRM Class I than any other alternative, resulting in the highest level of protection to sensitive Native American cultural landscapes from adverse impacts. With the emphasis on managing more SRMAs, there would likely be more conflict between recreation and protecting sensitive tribal resources than under other alternatives.	Under the Proposed Plan Alternative, impacts would be similar to those described for Alternative D.
<b>Public Safety (Section 4.6.2)</b>				

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Overall, adverse impacts under Alternative A would increase over time as the planning area receives more visitation. Primary drivers of risks to public safety would include wildland fire, potential contamination of water supplies, risk of injury from recreational activities and, in particular, recreational target shooting. Additional risks would be present from conflicts between recreational users and livestock grazing.	Under Alternative B, adverse impacts to public health and safety would generally be reduced due to the focus on resource protection and related limitations on access and activities. Risk of contamination of water and soils would be reduced due to surface use restrictions. In addition, travel- and recreation-based risks would be decreased relative to those under Alternative A due to lack of recreation emphasis areas and, importantly, a ban on recreational target shooting. Risk of conflict between the recreating public and livestock would similarly be reduced.	Under Alternative C, some restrictions on activities would reduce adverse impacts relative to current conditions; surface disturbance limitations would protect public water supplies above levels in Alternative A but below those under Alternative B. Risks to public safety from recreation activities, including recreational target shooting, would be reduced compared to Alternative A. Closure of routes to the public would be the highest under this alternative; therefore the risk of injury from motorized or mechanized use may be slightly reduced when compared with that under other alternatives.	Under Alternative D, restrictions on activities near streams and sensitive soils would reduce risks for contamination of water as described under Alternative C. Recreational target shooting would be prohibited within high concentration recreation areas, reducing the risk of accidental shooting in these locations. Mitigation measures for bighorn sheep include required use of guard animals with domestic sheep, which would increase the potential for conflict with recreationists. The designation of a Watchable Wildlife Area may increase traffic along the Escalante Canyon Road, which could potentially increase the risk of safety hazards along the narrow county-maintained road.	Under the Proposed Plan Alternative, restrictions on activities near streams and sensitive soils would reduce risks for contamination of water as described in Alternatives C and D. Recreational target shooting would be prohibited within specific high concentration recreation areas, reducing the risk of accidental shooting in these specific locations. This would provide greater protection to public health and safety than Alternative A, but fewer protections than Alternatives B and D. As in Alternative D, the Proposed Plan Alternative's designation of a Watchable Wildlife Area may increase traffic along the Escalante Canyon Road, which could potentially increase the risk of safety hazards along the narrow county-maintained road.
Social and Economic Conditions (Section 4.6.3)				
Alternative A is not expected to result in adverse impacts, reduce economic diversity (the number of economic sectors) or increase economic dependency, which occurs when the local economy is dominated by a limited number of industries. Although shifts in emphasis could occur, these changes would not result as a	Alternative B is not expected to result in adverse impacts, reduce economic diversity or increase economic dependency. Although shifts in emphasis could occur, these changes would not result as a consequence of planning actions under this alternative. As a result of Alternative B, about 107 total	Alternative C is not expected to result in adverse impacts, reduce economic diversity or increase economic dependency. Although shifts in emphasis could occur, these changes would not result as a consequence of planning actions under this alternative. As a result of Alternative C, about 117 jobs	Alternative D is not expected to result in adverse impacts, reduce economic diversity or increase economic dependency. Although shifts in emphasis could occur, these changes would not result as a consequence of planning actions under this alternative. As a result of Alternative D, 118 jobs and \$3.4	The Proposed Plan Alternative is not expected to result in adverse impacts, reduce economic diversity or increase economic dependency. Although shifts in emphasis could occur, these changes would not result as a consequence of planning actions under this alternative. As a result of the

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<p>consequence of planning actions under this alternative. As a result of Alternative A, about 118 total jobs (direct, indirect and induced jobs) and \$3.4 million in total labor income (direct, indirect and induced income) would be generated in the three-county analysis area economy on an average annual basis from recreation, livestock grazing, payments to counties, BLM expenditures and externally funded projects on the BLM. Employment and labor income contributions are slightly higher than current contributions evaluated in Chapter 3 due to average annual anticipated increases in recreation visits.</p> <p>Although employment and labor income contributions under this alternative would be higher than Alternatives B and C, this alternative would manage less acreage under VRM Class I and II designations. In addition to providing the least protection of D-E NCA's visual resources, Alternative A would protect fewer acres using special land designations (ACECs, lands with wilderness character, heritage areas, and areas suitable for congressional WSR designation) than the other alternatives. Therefore this alternative would</p>	<p>jobs (direct, indirect and induced jobs) and \$3.2 million in labor income (direct, indirect and induced income) would be generated in the three-county analysis area economy on an average annual basis from recreation, livestock grazing, payments to counties, BLM expenditures and externally funded projects on BLM lands. Employment and labor income contributions are less than the other alternatives due to lower projected levels of allocated grazing resulting from the closure of allotments to domestic sheep grazing.</p> <p>Although employment and labor income contributions under this alternative would be less than the other alternatives, this alternative would manage more acres to minimize changes in the natural characteristics of D-E NCA lands than any other alternative, with the exception of the Proposed Plan Alternative; and the only alternative to protect inventoried wilderness characteristics in all D-E NCA lands identified to have those characteristics. Therefore this alternative would provide greater protection of non-market values associated with visual</p>	<p>and \$3.4 million in labor income would be generated in the three-county analysis area economy on an average annual basis from recreation, livestock grazing, payments to counties, BLM expenditures and externally funded projects on BLM lands. These employment and labor income contributions are lower than under the other alternatives, apart from Alternative B, due to lower levels of project grazing use evaluated under this alternative than the other alternatives.</p> <p>Although employment and labor income contributions under this alternative would be relatively the same as those supported by current NCA management, this alternative would provide greater protection of the D-E NCA's natural resources through special land designations. Therefore this alternative would provide more protection of non-market values associated with visual resources, ACECs and suitability for WSR designation relative to the other alternatives.</p>	<p>to \$3.5 million in labor income would be generated in the three-county analysis area economy on an average annual basis from recreation, livestock grazing, payments to counties, BLM expenditures and externally funded projects on BLM lands. These employment and labor income contributions are higher than under the other alternatives due higher anticipated recreation visits than the other alternatives. In addition, projected allocated grazing use is higher than all alternatives apart from Alternative A.</p> <p>Although employment and labor income contributions under this alternative would be higher than under the other alternatives, fewer areas would be designated under protected area designations than the other alternatives, apart from Alternative A. Although virtually the same amount of acreage managed for visual resources as under Alternative C, no river segments would be managed as WSR suitable or eligible segments. Therefore this alternative would provide less protection of non-market values associated natural amenities than the other alternatives, apart from Alternative A however, the most protection of</p>	<p>Proposed Plan Alternative, 118 jobs and from \$3.3 to \$3.4 million in labor income would be generated in the three-county analysis area economy on an average annual basis from recreation, livestock grazing, payments to counties, BLM expenditures and externally funded projects on BLM lands. These employment and labor income contributions are higher than under the other alternatives, with the exception of Alternative D, due to higher anticipated recreation visits.</p> <p>Although employment and labor income contributions under this alternative would be higher than the other alternatives, apart from Alternative D, this alternative would provide greater protection of the D-E NCA's visual resources through special land designations, apart from Alternative C. Therefore this alternative would provide more protection of non-market values associated with visual resources, ACECs and suitability for WSR designation relative to the other alternatives.</p>

Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
provide less protection than the other alternatives of non-market values associated with natural amenities protected on these lands.	resources, wilderness characteristics, than the other alternatives however, less than Alternatives C in terms of the additional non-market values associated with WSR suitable segments.		non-market values associated with ACECs and Heritage Area designations.	

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## **Chapter 3. Affected Environment**

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## 3.1. Introduction

The purpose of this chapter is to describe the existing biological, physical, and socioeconomic characteristics of the planning area, including human uses that could be affected by implementing the alternatives described in Chapter 2. This chapter includes a discussion of resources, resource uses, special designations, and social and economic conditions.

The D-E NCA decision area encompasses 210,172 acres of BLM-administered lands in Colorado's Mesa, Delta, and Montrose Counties (note that this reported acreage number may vary by up to 30 acres because of variability in the best available current survey information). The surrounding communities of the D-E NCA, which include the cities of Grand Junction, Delta, and Montrose, are a large part of the affected environment of the D-E NCA. Therefore, where appropriate, this chapter describes existing conditions that extend outside the D-E NCA to these surrounding communities.

Certain types of resources that may be present in other BLM planning areas, such as wild horses and burros, do not exist in the D-E NCA and are therefore not covered in this section. In addition, some uses that may be present in other BLM planning areas, such as mining and oil and gas, are not allowed in the D-E NCA due to the language of the Omnibus Act. These uses are also not covered in this section. One active mining claim exists within the D-E NCA, upstream of Rattlesnake Gulch along the Gunnison River. All other mining claims within the D-E NCA have either expired or are no longer active.

Information from broad-scale assessments was used to help set the context for the planning area. Much of the information used for this chapter was taken from the D-E NCA *Analysis of the Management Situation* (BLM 2011a). The level of information presented in this chapter is commensurate with and sufficient to assess potential effects discussed in Chapter 4, on the basis of the alternatives presented in Chapter 2.

Acreage figures and other numbers are used as approximate projections; readers should not infer that they reflect exact measurements or precise calculations. Acreages were calculated using geographic information system (GIS) technology, and there may be slight variations in total acres between resources.

The order in which resources, resource uses, special designations and social and economic conditions appear reflect the order of Chapter 2 and Chapter 4.

## 3.2. Resources

### 3.2.1. Geological and Paleontological Resources

The geological resources of the D-E NCA were identified in the 2009 Omnibus Act as one of the purposes of the area's designation as an NCA. The beauty of the geology of the D-E NCA's canyons (Escalante, Big and Little Dominguez Canyons, as well as the canyon walls lining the Gunnison River) is a key component of the scenery that draws visitors to the area. The scientific and educational value of the D-E NCA's geological resources also makes these resources exceptional. The 2009 Omnibus Act withdrew the D-E NCA from "location, entry, and patent under the mining laws," which means that the geological resources of the D-E NCA will only be

managed for these scenic, scientific and educational values, except in the case of valid existing rights (see subsection entitled mineral use).

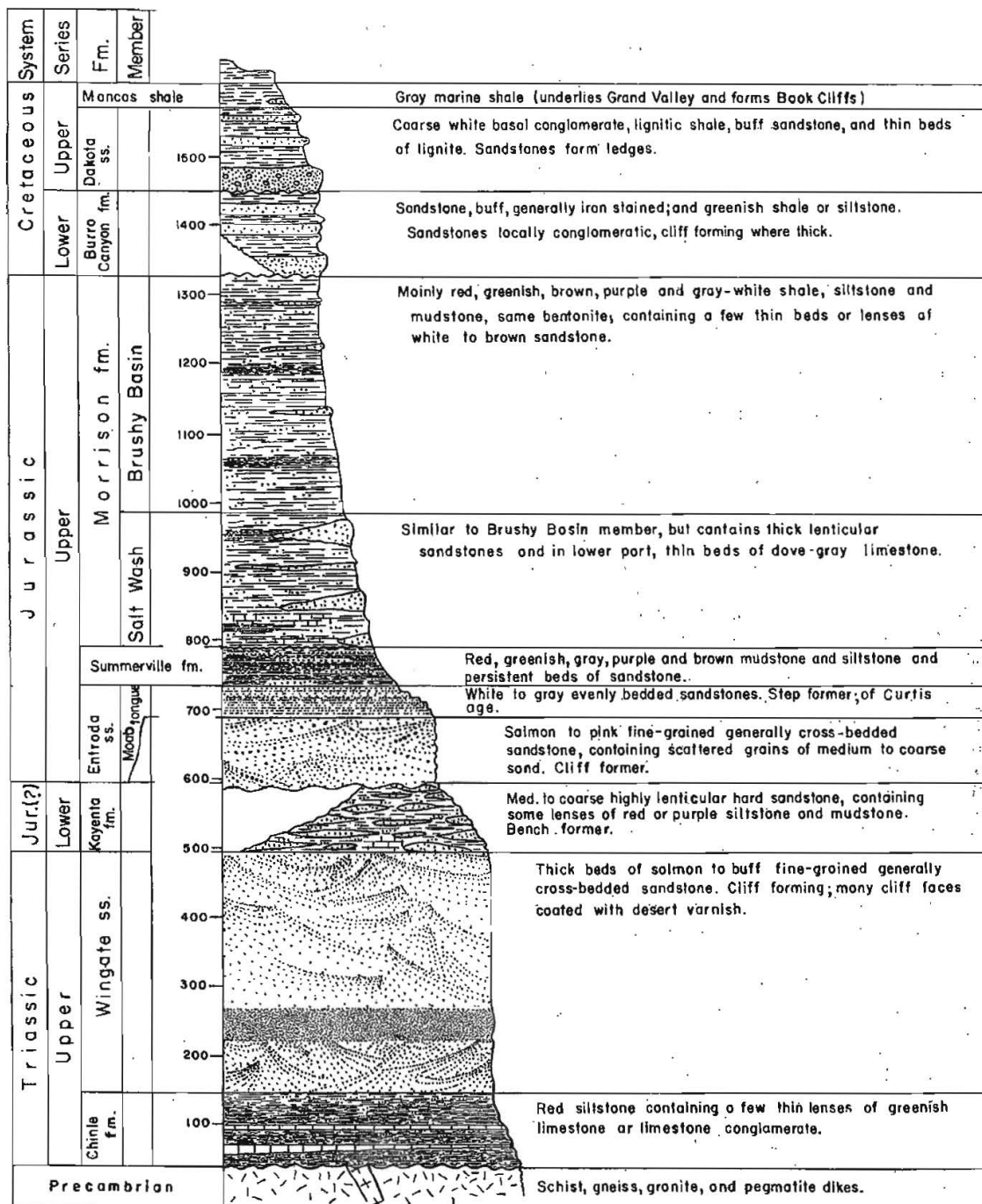
## Geological Structure

D-E NCA's natural resources exist within the context of D-E NCA's physical geology. The geology is composed of numerous geologic formations from the oldest Precambrian crystalline igneous and metamorphic rocks through the youngest sediments of the Quaternary alluvial deposits. The surface of the northeastern D-E NCA boundary is composed of the Mancos Shale. Older geological formations comprise much the surface of the rest of the D-E NCA as part of the northeast flank of the Uncompahgre Plateau (Map 3-1). The plateau is about 100 miles long and 25 miles wide trending northwest-to-southeast from the Colorado National Monument to Ridgway and the San Juan mountains. High-angle west-to-northwest and northwest trending faults are found mostly along the western margin, but they are also found within the plateau (Toth, Patterson, Kulik, and Schreiner 1987). Regional uplift, beginning during the Laramide (70-50 million years before present), and continuing in Late Tertiary, and Pleistocene times produced the Uncompahgre Plateau and other topographic features seen today in the region (Toth, Patterson, Kulik, and Schreiner 1987). The plateau has risen a total of about 6,700 feet in relation to the Book Cliffs in the Grand Junction area (Chronic 1980).

The geologic rock record includes sediments deposited in the (from youngest to oldest) Quaternary, Cretaceous, Jurassic, and Triassic periods, with an unconforming erosional boundary between the sedimentary Triassic rocks and the intrusive and metamorphic rocks from the Precambrian Era. Unconforming means a series of younger strata that do not succeed the underlying older rocks in age or in parallel position, as a result of a long period of erosion or nondeposition. Unconformities can be small or huge in size and time frames, representing eroded formations. Only the larger or more significant unconformities are explained in detail, whereas smaller unconformities are simply noted when present. Throughout the D-E NCA, the surface often also has various unconsolidated Quaternary deposits, including alluvium and colluvium, older alluvial deposits, and landslides. Small placer gold deposits have been found and exploited in the gravels of the Gunnison River and some of its tributaries.

## Geologic Formations

The D-E NCA is primarily underlain by flat-lying to monoclinally folded late Paleozoic to Mesozoic sedimentary rocks (see Figure 3.1). These sedimentary rock formations are, in order from oldest to youngest, the Chinle Formation, Wingate Sandstone, Kayenta Formation, Entrada Formation, Wanakah Formation, Morrison Formation, Burro Canyon Formation, and Dakota Formation. Precambrian rocks exposed in the area lie beneath the sedimentary rock layers and include metamorphic gneisses intruded by mafic and ultramafic rocks, diorites, granites, and pegmatites. Precambrian rocks of approximately 1.7 billion years, intruded by 1.4 billion-year-old igneous rocks, are exposed in the core of the Uncompahgre Plateau (Dickerson, Case, Barton, and Chatman 1988). A small area of Mancos Shale comprises the northeastern corner of the D-E NCA.



**Figure 3.1. Geological Formations in the D-E NCA**

### *Precambrian Rocks*

These 1.7 to 1.4 billion year old crystalline rocks make up the core of the Uncompahgre Plateau and lay beneath the red rock formations described below.

### *Chinle Formation*

The 30- to 160-foot thick Triassic Chinle Formation overlies the much older Precambrian crystalline rocks. What's missing in between is about one and a half billion years of geologic history that is often referred to as the "Great Unconformity." The missing formation represent over a billion years of erosion – rock formations that were built up and then were completely eroded away. The depositional regime of the Chinle Formation ranged from fluvial, to floodplain, to lacustrine continental environments that deposited brick-red, interbedded siltstones, sandstones, and shales (Toth, Patterson, Kulik, and Schreiner 1987).

### *Wingate and Kayenta Formations*

The Upper Triassic Wingate sandstone conformably overlies the Chinle Formation, meaning it was deposited above the Chinle and not eroded away. The Wingate consists of orange-red, massive, fine-grained, well-sorted sandstone that forms steep cliffs from 80 to 100 feet high, found along the Big and Little Dominguez Creeks. Massive crossbeds, vertical joints, and desert varnish are common features of the Wingate and it also forms arches in some places. The Upper Triassic Kayenta Formation conformably overlies the Wingate and is up to 300 feet thick in some places. It consists of discontinuous lenses of purplish-red sandstone interbedded with shale and conglomerate, forming a series of benches and ledges above the Wingate (Toth, Patterson, Kulik, and Schreiner 1987).

### *Entrada Formation*

The Middle Jurassic Entrada Sandstone is 70 to 120 feet thick in most places and lies unconformably over the Kayenta. It is composed of salmon pink, nonresistant, horizontally bedded siltstone, mudstone, and sandstone. It forms smooth, rounded cliffs with large-scale sweeping crossbeds, indicating an eolian or wind-blown origin (Toth, Patterson, Kulik, and Schreiner 1987). When wind-blown sediment piles reach a height where they are unstable, the grains avalanche down the side of the pile and make a thin depositional layer of the grains that moved. Over time, multiple avalanching episodes resulted in many thin parallel layers next to one another. These are called cross beds.

### *Wanakah and Morrison Formations*

The Jurassic-age Wanakah unconformably overlies the Entrada Sandstone and consists of thin, evenly bedded mudstone and sandy shale with chert layers and nodular limestone up to 20 to 45 feet thick. Sedimentary beds are predominantly red but can be green, brown, light yellow, or even white. The formation often forms a talus-covered slope (Toth, Patterson, Kulik, and Schreiner 1987). The Jurassic Morrison Formation unconformably overlies the Wanakah Formation. In some areas erosion places it on the Entrada Sandstone. In this region, the Morrison is divided into three members, the Tidwell, Salt Wash, and Brushy Basin Members, in ascending order. Tidwell and Salt Wash formations are difficult to distinguish for the untrained eye.

The youngest member of the Morrison Formation is the *Brushy Basin*, which consists of 75 percent variegated, gray, green, lavender, and maroon bentonitic mudstone and 25 percent brown sandstone and conglomerate, which is more predominant in the upper part (Hintze 1988; Doelling 1996). The bentonite is derived from voluminous amounts of volcanic ash that was deposited on a broad floodplain traversed by north and northwesterly flowing paleo-streams (Turner-Peterson, Santos, and Fishman 1986). Dinosaur bone and petrified wood are locally found at surface exposures of this member. The upper contact of the Brushy Basin is a subtle

unconformity. The depositional environment of the Morrison Formation – braided streams, lakes, and deltas – provided what Blakey and Ranney (2008) describe as “one of the world’s great dinosaur graveyards.”

### *Burro Canyon and Dakota Formations*

The Burro Canyon Formation has been recognized as the basal Cretaceous unit above the Morrison Formation in the area to the east of the Colorado River, and this terminology has been used in the Grand Junction, Colorado area (Hintze 1988; Doelling 2001). The Dakota Sandstone unconformably overlies the Burro Canyon Formation, and varies from 0 to 200 feet thick (Hintze 1988; Doelling 1996). The Dakota consists of brown and yellow fluvial sandstone and conglomerate, interbedded green, gray, and black mudstones, and locally some thin coal.

### *Mancos Shale*

A thick interval of marine Upper Cretaceous Mancos Shale overlies the Dakota Sandstone; this unit is roughly 3,800 feet thick in Grand Junction area (Lohman 1965). The Mancos Shale consists of gray, thin-bedded, fissile (capable of being split) shale that contains fossils, interbedded or alternating with sandstones and sandy siltstones – evidence of sea level variations.

## **Outstanding Geological Features**

The geological resources of the D-E NCA were cited in the Omnibus Act as a purpose of the D-E NCA’s designation. Within the D-E NCA, outstanding geological features such as arches, hoodoos, and monuments are part of what draws visitors to the D-E NCA. Some outstanding geological features, such as the Gunnison Gravels, are scientifically significant to the larger region. The Gunnison Gravels site is associated with a fluvial gravel deposit that suggests the location of an ancestral river in Unaweep Canyon. Ill-placed climbing anchors, vandalism, gunfire or motorized traffic can break or erode fragile features. These features likely exist throughout the D-E NCA. However, comprehensive surveys of the D-E NCA for these features have not been completed.

## **Mineral Use**

Previous mineral activity that occurred in the NCA included gold prospecting, obtaining gravel (several county gravel pits), and flagstone quarrying. The D-E NCA has also seen exploration for uranium, particularly in the 1950s and 1960s. These uses are no longer allowed within the D-E NCA, except in the case of valid existing rights that predate the Omnibus Act.

The Omnibus Act withdrew the D-E NCA from

“1. all forms of entry, appropriation, or disposal under the public land laws; 2. location, entry, and patent under the mining laws; and 3. operation of the mineral leasing, mineral materials, and geothermal leasing laws.”

This withdrawal was subject to valid existing rights that existed prior to the Omnibus Act. There is one existing mining claim in the D-E NCA, which is located upstream of Rattlesnake Gulch along the Gunnison River. The holder of this claim has legal right to access, explore, and mine. All other claims that were in existence prior to the Omnibus Act have since expired.

## Paleontology

The fossil treasures of the D-E NCA were specifically cited as a purpose of the Dominguez-Escalante area's designation as an NCA in 2009. In the D-E NCA, fossil-bearing sedimentary rocks range in age from Triassic to Quaternary (245 million years ago to present) and include parts of the three great periods of earth history during the Phanerozoic (*phaneros*, meaning visible, *zoic*, meaning life) eon, encompassing the Paleozoic, Mesozoic, and Cenozoic eras. This is a span of geologic time extending about 542 million years from the end of the Proterozoic Eon (which began about 2.5 billion years ago) to the present. Roughly 38.5 percent or 81,801 acres of the planning area's surface (Map 3–2) has either Morrison or Chinle Formation on the surface, and these formations have produced many scientifically significant fossils (Potential Fossil Yield Classification or PFYC Class 4–5).

The D-E NCA has 76 identified paleontological fossil sites according to an overview report prepared by Uinta Paleontological Associates (Trujillo 2011). More will certainly be found. There are currently 3 active quarry sites in the D-E NCA for research purposes. In the spring of 2010, one of these quarry sites produced the skull of an ankylosaurid, a rarely found armadillo-like dinosaur, which garnered significant publicity throughout the State of Colorado. Other significant sites include the Burrit Bone Bed and the Young Egg Locality. The Burrit Bone Bed is an in-situ bone bed containing vertebrae, ribs and additional fossils from a *Supersaurus vivianae*, only the second one discovered to date. The Young Egg Locality was the site of a Jurassic dinosaur nest where egg shells and some teeth and other skeletal materials were discovered and excavated between 1987 and 2007. Some vertebrate paleontological resource areas within the D-E NCA have been vandalized.

The geology of the D-E NCA spans a time of roughly 1.7 billion years. Table 3.1 below contains a list of major rock units from oldest to youngest, their PFYC classification, and some of the fossils that have been found in each unit.

**Table 3.1. Paleontological Resources by Geologic Rock Unit**

Geologic Unit	Potential Fossil Yield Classification (PFYC)	Fossils Found in This Geological Unit
Modern Alluvium	PFYC 2	Modern bison (buffalo)
Ancient Alluvium	PFYC 3	Musk ox, invertebrates, and plants
Glacial drift of Pinedale and Bull Lake Glaciations	PFYC 3	None known
Mancos Shale	PFYC 3	Dinosaurs (two duck-billed dinosaurs), marine reptiles (plesiosaurs and mosasaurs), fish, sharks, clams, oysters, ammonites, scaphites, baculites, mollusks, plants, crinoids, and others
Dakota Sandstone	PFYC 3	Dinosaur tracks, plant fragments
Burro Canyon Sandstone	PFYC 3	Dinosaurs, including a meat-eating theropod; petrified wood, cycads, <i>Tempskya</i> (fern) wood, and plant impressions that include leaves and flowers

Geologic Unit	Potential Fossil Yield Classification (PFYC)	Fossils Found in This Geological Unit
Morrison	PFYC 4-5	Dinosaurs, including the large plant eating sauropods: <i>Apatosaurus</i> ( <i>Brontosaurus</i> ), <i>Barosaurus</i> , <i>Brachiosaurus</i> , <i>Camasaurus</i> , <i>Diplodocus</i> , <i>Supersaurus</i> , and <i>Ultrasaurus</i> ; the meat-eating theropods: <i>Allosaurus</i> , <i>Ceratosaurus</i> , <i>Torvosaurus</i> , and others; and the bird-hipped ornithopods: <i>Dryosaurus</i> , <i>Camptosaurus</i> , iguanodontids, <i>Stegosaurus</i> , <i>Mymoorapelta</i> , and others; fish ( <i>Coccolepis</i> , and one other), lizards, turtles, crocodilians (including <i>Fruitachampsia</i> and <i>Goniopholis</i> ), a pterosaur and five families of small primitive mammals (including docodonts, triconodonts (including <i>Priacodon fruitaensis</i> ), multituberculates, symmetrodonts, dryolestid eupantotheres, and possibly monotremes, and a new form named <i>Fruitafossor windscheffeli</i> ); various invertebrates, including fresh water clams, gastropods (snails), ostracods, conchostrachans, and others; and plants, including conifer trees, seed fern trees, horse tails, cycads, and others
Summerville	PFYC 3	Gastropods (snails)
Entrada	PFYC 3	Tracks of small meat-eating dinosaurs
Kayenta	PFYC 3	Possible tracks of small meat-eating dinosaurs
Wingate	PFYC 3	Tracks of small meat-eating dinosaurs
Glen Canyon Group	PFYC 3	See Kayenta, and Wingate
Chinle	PFYC 4-5	Metoposaurs (giant amphibians), phytosaurs (large “armored crocodiles”), tracks of various amphibians and reptiles, lungfish burrows, insect tracks, and worm and other invertebrate burrowings
Moenkopi	PFYC 3	Tracks of various insects, amphibians, and reptiles
Biotitic Gneiss, Schist, Migmatite	PFYC 1	No fossils
Granitic rocks of under 1,400 million years ago	PFYC 1	No fossils
Granitic rocks of 1,400 to 1,700 million years ago	PFYC 1	No fossils
Granitic rocks of over 1,700 million years ago	PFYC 1	No fossils

### The Potential Fossil Yield Classification or PFYC system

This system rates the potential for geologic units to contain significant fossil resources. This classification system predicts that fossils might be found in particular formations, on the basis of past scientific experience. Five classes were developed, with Class 1 having very low potential for containing fossils and Class 5 having very high potential. Two geologic formations in the D-E NCA are rated as Classes 4–5 and often require paleontology surveys prior to any surface disturbance—these are the Morrison and Chinle Formations. Table 3.2 shows the acreages of different PFYC classes within the D-E NCA (also see Map 3–2).

**Table 3.2. Potential Fossil Yield Classes in D-E NCA**

PFYC Class	Acres	Percentage
1	5,755	2.6
2	8,352	3.82
3	122,586	56.1

PFYC Class	Acres	Percentage
4-5	81,701	37.4
<i>Sources: I No. 2008-009 and Handbook H-8270-1, General Procedural Guidance for Paleontological Resource Management (BLM 1998c); PFYC = potential fossil yield classification</i>		

### 3.2.2. Biological Systems

Section 3.2.2 deals with the biological systems of the D-E NCA, including priority vegetation and habitats, special status species and communities, fish and wildlife, noxious and invasive weeds, fire and fuels, and soils and water quality. Climate and climate change are also included in this section because of their influence on the biological systems of the D-E NCA.

#### 3.2.2.1. Priority Species and Habitats

The planning team went through an extensive process to consider priority biological species and communities so that future management could be based on a comprehensive understanding of species and habitat/vegetative community relationships. As part of this process, the BLM identified vegetation/habitat types and species (plants or wildlife) that would be priorities for management and would thus require special management consideration and attention. Seven vegetation/habitat types, covering nearly all of the D-E NCA, were selected as priorities. These are desert shrub/saltbush, pinyon-juniper woodlands, sagebrush shrublands, ponderosa pine, mountain shrub, riparian systems, seeps and springs and aquatic systems, which are all described in this section. Desert bighorn sheep and Colorado hookless cactus were identified as priority species, as they require special management consideration and attention beyond management of their broader habitat types. Habitat for other special status species, fish and wildlife (including big game) are largely managed through management of the priority vegetation or habitat types listed in this section.

After identifying the key attributes and associated indicators of health for each priority species and vegetation the planning team established standards for each indicator so that its current condition could be summarized as “poor,” “fair,” “good,” or “very good.” The gap between current and desired condition were used to define objectives for management. Objectives were focused particularly on key attributes that were determined to currently be in “fair” or “poor” condition. This planning process is based on the “Planning for Priority Species and Vegetation” training given by the BLM’s National Training Center. For more detail on indicators, please see Appendix A.

These indicators should be considered additional to the Colorado Standards for Public Land Health, which the BLM is required to meet (or make progress toward meeting) in the State of Colorado (BLM 1997 and Appendix D). Table 3.3 shows the results of the last round of land health assessments in the D-E NCA for the vegetation standard, Standard 3 (also see Map 3–7). These assessments were completed between 2007 and 2009. It should be noted that land health assessments have not been completed for 7 percent of the D-E NCA. The majority of these acres were not assessed, because of access difficulties or because they fall outside of current grazing allotments. For a description of the issues that have contributed to land health problems within the D-E NCA, see the more detailed descriptions for each vegetative community below.

The Colorado Plateau Rapid Ecoregional Assessment (CPREA) is an ecoregional-level document to be used as an informational tool by the BLM. The CPREA identifies “change agents” associated with specific “conservation elements.” Change agents include both natural and anthropogenic



disturbance factors, and conservation elements include ecological systems as well as wildlife species. Current distribution data layers used in the CPREA are not significantly different from BLM layers used for D-E NCA PPSV analyses. The CPREA addresses certain ecological systems as conservation elements, which mirror the priority vegetation/habitats chosen for PPSV in the D-E NCA RMP. Specifically, the PPSV identifies “desert shrub/saltbush,” whereas the CPREA identifies “inter-mountain basins mixed salt desert scrub”; PPSV identifies “pinyon juniper woodlands,” whereas CPREA identifies “pinyon juniper shrublands”; PPSV identifies “sagebrush shrublands,” whereas CPREA identifies “inter-mountain basins big sagebrush shrublands”; PPSV identifies “mountain shrub,” whereas CPREA identifies “Rocky Mountain Gambel’s oak-mixed montane shrubland.” Both PPSV and CPREA identify “Riparian vegetation.”

**Table 3.3. Results of Recent Land Health Assessments in Upland Sites in the D-E NCA**

Standard	Land Meeting LHA Standards	Land Meeting LHA Standards with Problems	Land Not Meeting LHA Standards	Land Not Completed
Standard 3, Healthy Native Communities	162,207 acres (74%)	29,176 acres (13%)	10,797 acres (5%)	15,708 acres (7%)

## Desert Shrub/Saltbush

The desert shrub/saltbush vegetative community commonly occurs on saline and other droughty soils in the driest portions of the D-E NCA below 6,000 feet. This vegetative community occupies 21 percent of the D-E NCA (Map 3–3). The following shrubs characterize this drought-tolerant vegetation type: shadscale (*Atriplex confertifolia*), Gardner saltbush (*Atriplex gardneri*), mat saltbush (*Atriplex corrugata*), black greasewood (*Sarcobatus vermiculatus*), four-wing saltbush (*Atriplex canescens*), black sagebrush (*Artemisia nova*), winterfat (*Krascheninnikovia lanata*), snakeweed (*Gutierrezia sarothrae*), and prickly pear cactus (*Opuntia polyacantha*). The shrubs listed above occur in varying amounts, and in various combinations depending on the soil type and disturbance history of the area. Native grasses in this vegetation type include galleta grass (*Pleuraphis jamesii*), bottlebrush squirreltail (*Elymus elymoides*), Salina wild rye (*Leymus salinus*), and Indian rice grass (*Achnatherum mymenides*) on better condition sites. Many different forbs occur, with some of the most common including wild buckwheats (*Eriogonum* spp.), wild onions (*Allium* spp.), and biscuitroots (*Lomatium* and *Cymopterus* spp.).

The health of a number of “nested” special status species is tied to the health of this vegetative type. “Nested” species are those species that rely on the health of other plant and animal species. Note that not all of these species are currently found in the D-E NCA. These species are as follows:

- white-tailed prairie dog (*Cynomys leucurus*), BLM sensitive species
- burrowing owl (*Athene cunicularia*), BLM sensitive species
- black-footed ferret (*Mustela nigripes*), ESA endangered
- ferruginous hawk (*Buteo regalis*), BLM sensitive species
- longnose leopard lizard (*Gambelia wislizenii*), BLM sensitive species
- midget-faded rattlesnake (*Crotalus viridis concolor*), BLM sensitive species
- milk snake (*Lampropeltis triangulum taylori*), BLM sensitive species

- Montrose bladderpod (*Lesquerella vicina*), BLM sensitive species
- Colorado desert parsley (*Lomatium concinnum*), BLM sensitive species
- various migratory birds

Colorado hookless cactus (*Sclerocactus glaucus*), a federally threatened plant species, and desert bighorn sheep, a BLM sensitive species, can also be found in this vegetative community within the D-E NCA. These two species were identified as priority species, because they require special management beyond management of the health of their habitat. Besides desert bighorn sheep, other big game species within this vegetative type include mule deer and pronghorn.

BLM staff identified four attributes and indicators for evaluating the condition of the desert shrub/saltbush vegetative community within the D-E NCA. These are shown in Table 3.4, with additional detail located in Appendix A. The D-E NCA's desert shrub/saltbush communities are in a "fair" or "poor" condition for four of the five attributes/indicators listed. A high concentration of land health problems are found in this vegetative community as a result of the following:

- Proximity of this vegetative community to Highway 50, the communities of Whitewater and Delta and utility corridors, which has led to repeated disturbance.
- Vulnerability of the soils and vegetation to prolonged drought, and the difficulties this presents to recovery from disturbance.
- Presence of a historic domestic sheep travel corridor through the Hunting Ground area that lies between the Gunnison River and Highway 50. This corridor was used to transport sheep from the San Juan Mountains to low elevation grazing country in Utah, which altered the vegetative composition of this area of the D-E NCA.
- Loss of native grasses and perennial forbs, which is thought to be largely a result of historic overuse by livestock.
- Vulnerability to noxious/and or invasive weeds such as cheatgrass (*Bromus tectorum*) and halogeton (*Halogeton glomeratus*), which can prevent the re-establishment of native plants and can lead to significant soil problems. These plants often dominate areas as a result of disturbance and/or over-utilization by livestock and wildlife.

**Table 3.4. Attributes for Evaluating Desert Shrub/Saltbush**

Attribute	Indicator	Data Source	Condition Rating	Rationale for Fair or Poor Condition Rating
Plant functional group composition	Percent of acres with insignificant deviation from expected functional group composition	Land health assessments	"Poor"	Too few acres have sufficient cover of native grasses and forbs.
Plant species composition/dominance	Percent of acres meeting Land Health Standard 3	Land health assessments	"Fair"	Too many acres are not meeting or meeting with problems.
Understory, invasive species	Percent of acres with less than 10% relative cover of understory, invasive species	Land health assessments	"Poor"	Too many acres have infestations by invasive plants

Attribute	Indicator	Data Source	Condition Rating	Rationale for Fair or Poor Condition Rating
Disturbance Regime	Percent of acres in early seral stage	Ecological site inventory and land health assessments	“Good”	Not Applicable
For more detail, see Appendix A, Planning for Priority Species and Vegetation.				

## Pinyon-Juniper Woodlands

The pinyon-juniper woodlands vegetative community occurs between 5,800 and 7,500 feet, and occupies more of the D-E NCA (61 percent) than any other vegetation type (Map 3–3). The pinyon-juniper woodland is dominated by Utah juniper (*Juniperus osteosperma*) and Colorado pinyon pine (*Pinus edulis*) in varying proportions, depending on soil, slope aspect, and elevation. There is typically a sparse and variable understory that may contain remnant shrubs like Wyoming big sagebrush (*Artemisia tridentata wyomingensis*), birchleaf mountain-mahogany (*Cercocarpus betuloides*), Utah serviceberry (*Amelanchier utahensis*), snakeweed (*Gutierrezia sarothrae*), and yucca (*Yucca harrimaniae*). Common herbaceous understory species include muttongrass (*Poa fendleriana*), Indian ricegrass (*Achnatherum hymenoides*), and bottlebrush squirreltail. Primary forbs in this type are western tansy mustard (*Descurainia pinnata*), scarlet globemallow (*Sphaeralcea coccinea*), rock goldenrod (*Petradoria pumila*), lobeleaf groundsel (*Packera multilobata*), and numerous species of *Penstemon*, *Arabis*, *Astragalus*, *Lomatium*, *Erigeron*, and *Machaeranthera*.

The health of a number of “nested” special status species is tied to the health of this vegetative type. All of these species are BLM sensitive species. These are as follows:

- Montrose bladderpod (*Lesquerella vicina*)
- Grand Junction milkvetch (*Astragalus linifolius*)
- Naturita milkvetch (*Astragalus naturitensis*)
- midget-faded rattlesnake (*Crotalus viridis concolor*)
- spotted bat (*Euderma maculatum*)
- Townsend’s big-eared bat (*Corynorhinus townsendii*)
- fringed myotis (*Myotis thysanodes*)
- northern goshawk (*Accipiter gentilis*)
- milk snake (*Lampropeltis triangulum taylori*)
- longnose leopard lizard (*Gambelia wislizenii*)
- various migratory birds

Colorado hookless cactus and desert bighorn sheep, both of which are priority species, because they require special management beyond management of the health of their habitat, can be found in this vegetative type. Mule deer and elk also use pinyon-juniper woodlands, and are important game species in the D-E NCA.

BLM staff identified six indicators and attributes for evaluating the condition of pinyon-juniper woodlands in the D-E NCA. These are listed in Table 3.5.

In general, pinyon-juniper woodlands are in good or very good condition in the D-E NCA. The most common problems associated with pinyon-juniper woodlands in the D-E NCA are associated with old vegetation treatments that sought to increase cattle forage in stands of pinyon and juniper in the 1960s. Pinyon and juniper are now reoccupying many of these same sites, however, the understory is often dominated by crested wheatgrass, a non-native grass that was often seeded onto sites following pinyon and juniper removal. This leads to low understory plant diversity. To address this issue, many of these same sites have been mechanically retreated in recent years to increase understory native plant diversity. Although the D-E NCA has never had commercial timber cutting, some pinyon-juniper stands have been damaged -- 1,264 acres have been severely degraded as a result of sustained fuel wood harvesting and road proliferation.

**Table 3.5. Attributes for Evaluating Pinyon-Juniper Woodland**

Attribute	Indicator	Data Source	Condition Rating	Rationale for Fair or Poor Condition Rating
Soil/sediment stability and movement	Percent of acres meeting Land Health Standard 1	Land health assessments	“Very Good”	Not applicable
Age class Structure	Percent of acres classified as old growth	Ecological site inventory and Ph.D. research	“Good”	Not applicable
Plant functional group composition	Percent of acres with insignificant deviation from expected functional group composition	Land health assessments	“Good”	Not applicable
Understory Invasive species (excluding crested wheatgrass)	Percent of acres with less than 10% relative cover of understory invasive species	Land health assessments	“Very Good”	Not applicable
Presence/ dominance of crested wheatgrass	Percent of acres with less than 50% relative understory cover of crested wheatgrass	Land health assessments	“Very Good”	Not applicable
Presence/ abundance of BLM sensitive plant species	Population trend	Best estimation based on Colorado Natural Heritage Program (CNHP) data	“Very Good”	Not applicable
For more detail, see Appendix A, Planning for Priority Species and Vegetation.				

## Sagebrush Shrublands

The sagebrush vegetative community is scattered throughout and occupies 11 percent of the D-E NCA (Map 3–3). This vegetation type typically occurs on deeper soils at elevations ranging from 5,000 to 7,500 feet. The sagebrush community is dominated by Basin big sagebrush (*Artemisia tridentata tridentata*) at the lowest elevations, Wyoming big sagebrush (*Artemisia tridentata* Nutt. subsp. *wyomingensis*) at mid elevations, and mountain big sagebrush (*Artemisia tridentata* subsp. *Vaseyana*) at the highest elevations. Black sagebrush (*Artemisia nova*) also occurs as a dominant shrub on some soils across this elevation range. The sagebrush type may occur on steeper, rockier sites, where it is usually successional to pinyon-juniper woodland vegetative communities in the absence of disturbance. Snakeweed (*Gutierrezia sarothrae*), Utah

serviceberry (*Amelanchier utahensis*), rabbitbrush (genus *Ericamera* or *Chrysothamnus*), and four-wing saltbush (*Atriplex canescens*) can be secondary shrubs in this vegetation type. The sagebrush vegetation type contains a variable understory that can include western wheatgrass (*Pascopyrum smithii*), galleta grass (*Pleuraphis jamesii*), bottlebrush squirreltail, Indian ricegrass (*Achnatherum hymenoides*), blue grama (*Bouteloua gracilis*), Sandberg bluegrass, muttongrass, needle-and-thread grass (*Heterostipa comata*), prairie junegrass (*Koeleria macrantha*), and many forbs. Among the most prominent forbs are scarlet globemallow (*Sphaeralcea coccinea*) and longleaf phlox (*Phlox longifolia*).

The health of three “nested” special status species is tied to the health of this vegetative type. These species are Gunnison sage-grouse (*Centrocercus minimus*), Grand Junction milkvetch (*Astragalus linifolius*), and Brewer’s sparrow (*Spizella berweri*). Various migratory bird species are also dependent on the health of sagebrush shrublands. Gunnison sage-grouse is listed as threatened under the ESA (USFWS 2014b). It is also considered critically imperiled by the CNHP. Deer and elk also rely on sagebrush shrublands, and are important game species in the D-E NCA.

BLM staff identified six indicators for evaluating the condition of sagebrush shrublands within the D-E NCA. These are listed in Table 3.6. Many of the sagebrush shrublands within the D-E NCA have been heavily manipulated for livestock grazing, including chaining in the 1950s and 1960s to increase grass production, seeding with non-native crested wheatgrass and fire suppression. Largely as a result of this manipulation and as a result of historic over-utilization by livestock and big game, the sagebrush shrublands vegetative community is in less-than ideal condition within the D-E NCA, with some indicators ranking as “poor” and “fair.” More recently, many of these sagebrush shrublands have been mechanically treated in order to increase understory plant diversity by removing older sagebrush and encroaching pinyon and juniper trees. Conditions in the D-E NCA’s sagebrush shrublands may be improving as a result of these treatments.

**Table 3.6. Attributes for Evaluating Condition of Sagebrush Shrublands**

Attribute	Indicator	Data Source	Current Rating	Rationale for Fair or Poor Condition Rating
Age class structure	Percent of acres with old/decadent sagebrush	Land health assessments	“Good”	Not applicable
Plant functional group composition	Percent of acres with insignificant deviation from expected functional group composition	Land health assessments	“Fair”	Too few acres have sufficient cover of native, perennial grasses and forbs
Understory invasive plants (excluding crested wheatgrass)	Percent of acres with less than 10% relative understory cover of invasive plant species	Land health assessments	“Fair”	Too many acres have infestations of cheatgrass
Presence of crested wheatgrass	Percent of acres with less than 50% relative understory cover of crested wheatgrass	Land health assessment data	“Fair”	Too many acres are dominated by crested wheatgrass
Wildlife habitat condition	Percent of acres with 10–30% sagebrush cover	Land health assessment data	“Poor”	Too few acres have sufficient shrub cover for Gunnison sage-grouse habitat
Number and size of patches	Number and size of sagebrush patches	Best estimation	“Good”	Not applicable
For more detail, see Appendix A, Planning for Priority Species and Vegetation.				

## Ponderosa Pine Woodlands

The ponderosa pine vegetative community occupies a small portion of the D-E NCA (0.4 percent) (Map 3–3). Soils, climate and fire history influence where this community is found and influence the understory vegetation found beneath the canopy of ponderosa pine. Many of the mountain shrub species are also found in this vegetative community. The more common species include birchleaf mountain mahogany (*Cercocarpus montanus*), Utah serviceberry (*Amelanchier utahensis*), Gambel’s oak (*Quercus gambelii*), Rocky Mountain juniper (*Juniperus scopulorum*), black chokecherry (*Prunus virginiana*), and roundleaf snowberry (*Symphoricarpos rotundifolius*). The herbaceous component is generally sparse but contains many of the same grasses and forbs found in the mountain shrub vegetative community described below.

The health of five “nested” special status species is tied to the health of this vegetative type. These species are northern goshawk, milk snake, spotted bat, Townsend’s big-eared bat, fringed myotis – all BLM sensitive species.

The BLM identified three sets of attributes and indicators for evaluating the condition of ponderosa pine woodlands, and they are listed in Table 3.7. Stands of ponderosa pine are generally in good condition within the D-E NCA. In some areas, the extent of ponderosa pine may be reduced from historical levels as a result of timber harvesting, fire suppression and vegetation manipulation. Largely as a result of fire suppression, the FRCC of ponderosa pine stands in the D-E NCA is in “fair” condition. Ongoing treatments designed to reduce ladder fuels in ponderosa pine woodlands have improved the FRCC in some of these stands.

**Table 3.7. Attributes for Evaluating Ponderosa Pine**

Attribute	Indicator	Data Source	Condition Rating	Rationale for Fair or Poor Condition Rating
Fire regime	FRCC	(FRCC)	“Fair”	Too many acres are in an altered or unnatural fire regime condition
Understory species composition	Presence of understory ladder fuels	Best estimation based on specialist opinion	“Good”	Not applicable
Number and size of patches	Historical number of stands relative to current number	Best estimation based on specialist opinion	“Good”	Not applicable

*For more detail, see Appendix A, Planning for Priority Species and Vegetation.*

## Mountain Shrub

The mountain shrub vegetative community occurs at elevations ranging from 7,000-9,000 feet, and makes up 5.1 percent of the D-E NCA (Map 3–3). Birchleaf mountain mahogany, Utah serviceberry (*Amelanchier utahensis*), and Gambel’s oak are prominent components. Soils, slope, aspect, and fire history influence the character and distribution of this vegetative community. Common herbaceous species include elk sedge (*Carex geyeri*), Letterman’s needlegrass (*Acnatherum lettermanii*), Kentucky bluegrass (*Poa pratensis*), muttongrass (*Poa fendleriana*), Sandberg bluegrass (*Poa secunda*), bottlebrush squirreltail (*Elymus elymoides*), western wheatgrass (*Pascopyrum smithii*), slender wheatgrass (*Elymus trachycaulus*), and nodding brome (*Bromus anomalus*). Forbs are numerous, with many species. Among the most widespread and

dominant are western yarrow (*Achillea millefolium*), lupine (*Lupinus* spp.), biscuitroot (*Lomatium* spp.), and aspen peavine (*Lathyrus lanzwertii*).

The health of one “nested” special status species is tied to the health of this vegetative type. This species is Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbian*, BLM special status). Various migratory birds also rely on this vegetative type. Big game like elk and deer utilize mountain shrub communities within the D-E NCA.

BLM staff identified four sets of attributes and indicators for evaluating the health of this vegetative community (see Table 3.8). These indicators were used to determine the current condition of this vegetative community. The mountain shrub vegetative community is currently in “good” or “very good” condition within the D-E NCA. It is less prone to invasion by non-native plants like cheatgrass. Its relative health can also be explained by the fact that it is not found in close proximity to any major highways, utility rights-of-way or residential areas.

**Table 3.8. Attributes for Evaluating Mountain Shrub**

Attribute	Indicator	Data Source	Condition Rating	Rationale for Fair or Poor Condition Rating
Age class structure	Number of acres in early, mid and late age classes	Best estimation based on specialist opinion	“Good”	Not applicable
Plant functional group composition	Percent of acres with insignificant deviation from expected functional group composition	Land health assessments	“Very Good”	Not applicable
Understory invasive species	Percent of acres with less than 10% relative understory cover of invasive plant species	Land health assessments	“Good”	Not applicable
Plant vigor	Percent hedging by big game and domestic livestock	Land health assessments	“Very Good”	Not applicable

*For more detail, see Appendix A, Planning for Priority Species and Vegetation.*

## Riparian

Riparian areas are a form of wetland transition between permanently saturated wetland and drier upland areas. These areas exhibit vegetative or physical characteristics reflective of permanent surface or subsurface water influence. Typical riparian areas are lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers, streams, glacial potholes, and shores of lakes and reservoirs with stable water levels. Excluded are such sites as ephemeral streams or washes that do not exhibit vegetation dependent on free water in the soil (BLM 1998a). There are 101 miles of lotic riparian habitat in the D-E NCA (Map 3–4).

Even though riparian and wetlands areas occupy only a small percentage of land, these areas provide a wide range of functions critical to many different wildlife species, water quality, scenery, and recreation (National Research Council 2002). Riparian resources were specifically singled out as one of the 14 purposes for the D-E NCA’s designation in the Omnibus Act of 2009.

The health of many special status species is tied to the health of this vegetative type. These species are considered “nested” species for this vegetative/habitat type: canyon tree frog, southwest willow flycatcher, bald eagle, yellow-billed cuckoo, longnose leopard lizard, big free-tailed bat, spotted bat, Townsend’s big-eared bat, fringed myotis and waterfowl. Various migratory birds and big game species are also dependent on the health of the riparian habitat type.

A set of seven attributes and indicators was developed for evaluating riparian health in the D-E NCA. These indicators should be considered additional to Standard 2 (riparian systems) of the Colorado Standards for Public Land Health, which the BLM is required to meet (or make progress toward meeting) in the State of Colorado (BLM 1997 and Appendix D). Also see Map 3–8 for the results of the most recent assessment of riparian proper functioning condition.

Measures for evaluating the health of the Gunnison River were made separate from measures for tributaries to the Gunnison River, because the BLM's ability to influence the management of the Gunnison River is limited within the planning area. These limitations include public-private interface, development along the riparian corridor (roads, utility corridors and railroad), and lack of control over water flows needed to maintain healthy riparian vegetation.

Table 3.9 describes the current condition of riparian resources within the D-E NCA. As can be seen from the table, riparian areas along tributaries of the Gunnison River are in better condition than the river itself. Invasive species composition is in "poor" condition on the Gunnison River, whereas it is in "very good" condition on tributaries. Declining presence of wetland obligate species, as well as unnatural structural diversity, in riparian areas also appear to be problems for the D-E NCA's riparian communities. Both of these issues are largely a result of decreased water flows and increased channelization along the D-E NCA's streams and rivers, which prevent establishment/retention of wetland obligate species and important structural species like cottonwoods.

**Table 3.9. Attributes for Evaluating Riparian Health**

Attribute	Indicator	Data Source	Condition Rating	Rationale for Fair or Poor Condition Rating
Fire/fuel load on Gunnison River	Fuel load	BLM greenline data	"Good"	Not applicable
Stream functionality	Percent of miles in proper functioning condition	BLM proper functioning condition data	"Good"	Not applicable
Presence of saline grasslands	Percent variation from present conditions in saline grasslands in riparian zones	Best estimate based on specialist opinion	"Good"	Not applicable
Invasive species composition on Gunnison River	Percent of sites with less than 20% relative cover of invasive plants	BLM greenline data	"Poor"	Too much of the riparian vegetation along the Gunnison River is invasive
Invasive species composition/dominance (excluding Gunnison River)	Percent of sites with less than 20% relative cover of invasive plants	BLM greenline data	"Very Good"	Not applicable
Presence of wetland obligate species	Trend in obligate plant cover	BLM greenline data	"Fair"	Too many riparian areas are losing wetland plant species



Attribute	Indicator	Data Source	Condition Rating	Rationale for Fair or Poor Condition Rating
Vegetation structural diversity	Percent of sites supporting the historic proportions of willows and cottonwoods	BLM greenline data	“Fair”	Too few acres have natural proportions of willows and cottonwoods
<i>For more detail, see Appendix A, Planning for Priority Species and Vegetation.</i>				

## Seeps and Springs

In the arid environment of the D-E NCA, springs are crucial to both livestock and wildlife. Seeps and springs are affected by the spread of noxious/and or invasive weeds and trampling, whereas droughts can have a delayed impact on water flow in seeps and springs. Drought and surface water diversion within the seep/spring recharge area can lead to loss of wetland obligate plant species and loss of seeps entirely.

The BLM conducted a spring inventory within the planning area starting in 2007 through 2010 (Map 3–9). Springs were inventoried and 19 water rights were filed on these springs. In the most rugged sections of D-E NCA, more springs and seeps may yet be discovered – usually emerging from formations in canyon walls, where permeable layers lay next to impermeable formations.

Seeps are also critical to some rare plant species, which may occur exclusively in areas watered by seeps. Management of the Eastwood’s monkey-flower, a BLM sensitive plant is “nested” under management of this habitat type. The health of these “nested” species is tied to health of the riparian vegetation and habitat type.

The BLM identified eight sets of attributes and indicators for evaluating the health of the D-E NCA’s seeps and springs. These are shown in Table 3.10. Although data are limited regarding seeps and springs in the D-E NCA, BLM specialists’ opinion suggests that many of these indicators are currently in “fair” condition in the D-E NCA. Decreasing size of seeps and springs, non-native weeds on seeps and springs and trampling were all identified to be management concerns in the D-E NCA. Note that although the BLM’s inventory may indicate that the number of seeps may be decreasing over our period of record, this could be due to natural variations in local climate, which are outside of the land manager’s control.

**Table 3.10. Attributes for Evaluating Health of Seeps and Springs**

Attribute	Indicator	Data Source	Condition Rating	Rationale for Fair or Poor Condition Rating
Groundwater hydrology	Number of well and water catchments in the recharge area	BLM GIS data	“Good”	Not applicable
Groundwater hydrology	Size of indicator seeps	Best estimate based on specialist opinion	“Good”	Not applicable
Invasive species composition/dominance	Percent of seeps and springs with non-native perennial species present	Best estimate based on specialist opinion	“Fair”	Too many seeps and springs have non-native plants present (e.g., tamarisk, Canada thistle, bull thistle)

Attribute	Indicator	Data Source	Condition Rating	Rationale for Fair or Poor Condition Rating
Presence of wetland obligate plant species	Trend in obligate cover	Best estimate based on specialist opinion	“Fair”	Too many seeps and springs are losing wetland obligate plant species
Rare plant presence	Number of seeps with continued presence of rare plants	Best estimate based on specialist opinion	“Good”	Not applicable
Surface water hydrology	Percent of seeps impacted by surface water diversions	Best estimate based on specialist opinion	“Good”	Not applicable
Trampling and human disturbance	Presence of trampling and human disturbance	BLM inventory data	“Fair”	Too many seeps and springs have shown evidence of trampling/disturbance
Number of seeps	Percent of seeps relative to current inventory	BLM inventory data	“Fair”	The D-E NCA appears to be losing seeps over time
<i>For more detail, see Appendix A, Planning for Priority Species and Vegetation.</i>				

## Aquatic Systems

The water resources of the D-E NCA were specifically cited as a purpose of the Dominguez-Escalante area’s designation as an NCA in 2009. The undeveloped nature and the quality of many of the water courses distinguish the D-E NCA from other areas in Western Colorado. These water resources support aquatic, riparian and terrestrial species throughout the D-E NCA.

The Gunnison River, 33 miles of which flow through the D-E NCA planning area, constitutes the fifth largest tributary to the Colorado River and is the only river within the D-E NCA. All of the D-E NCA falls within the Gunnison River basin. Dominguez Creek drains approximately 24 percent of the D-E NCA’s land area, including Rose Creek, Little Dominguez and Big Dominguez Creeks. Escalante Creek drains approximately 21 percent of the land area of the D-E NCA. Its tributaries include the Dry Fork of Escalante, Kelso Creek and North Fork. The only other perennial stream in the D-E NCA (besides a short section of Kannah Creek in the northeastern part of the D-E NCA and pieces of East Creek along the northern boundary) is Cottonwood Creek, which is part of the Roubideau Creek watershed. Roubideau Creek drains approximately 8 percent of the D-E NCA’s land area. The remaining land area of the D-E NCA (approximately 53 percent of the D-E NCA) is drained into the Gunnison River by intermittent and ephemeral streams.

The planning area contains 115 miles of fish-bearing streams (Map 3–10). There are more miles of fish-bearing stream than perennial stream, as the lower portion of Cottonwood Creek is identified as non-perennial. This segment of creek can go dry seasonally (fall), but it does flow most years, which facilitates seasonal use of the creek by fish. Waters known to contain fish include Big Dominguez Creek, Cottonwood Creek, Escalante Creek, the Gunnison River, Kelso Creek, Little Dominguez Creek, North Fork Escalante Creek, Rose Creek, Kannah Creek, and East Creek.

Seven special status fish species occupy the creeks and river of the D-E NCA, and one (humpback chub) is indirectly influenced by management. Five of these species are listed under the ESA. The health of all eight of these species within the D-E NCA is tied to the health of the aquatic systems that form their habitat. These “nested” species are as follows:

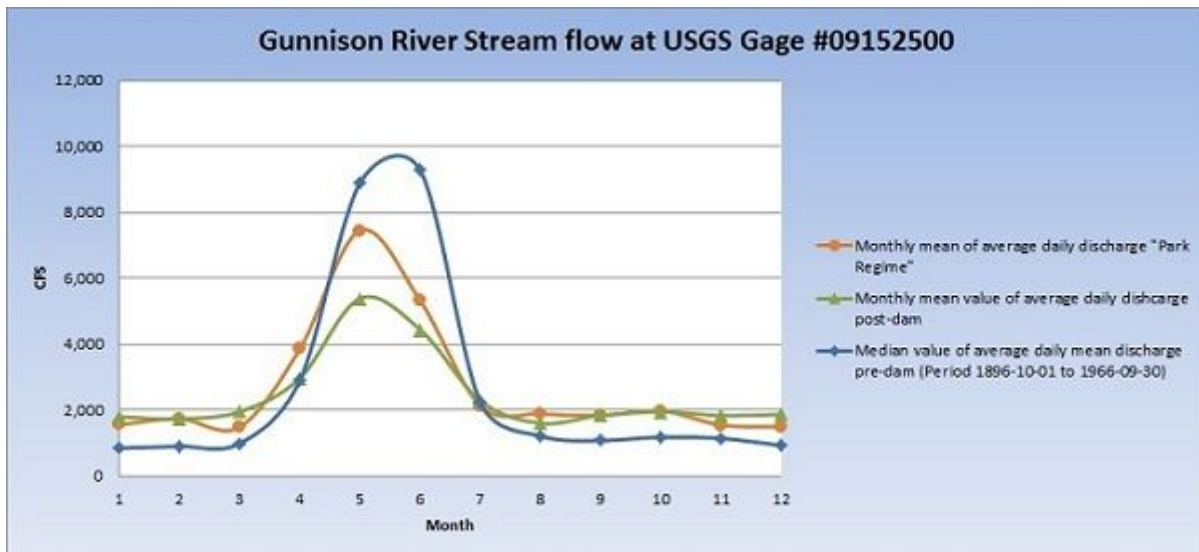
- bonytail (*Gila elegans*), federally endangered
- humpback chub (*Gila cypha*), federally endangered
- razorback sucker (*Xyrauchen texanus*), federally endangered
- Colorado pikeminnow (*Ptychocheilus lucius*), federally endangered
- green lineage cutthroat trout (*Oncorhynchus clarkii* spp.), currently considered federally threatened
- roundtail chub (*Gila robusta*), BLM sensitive
- bluehead sucker (*Catostomus discobolus*), BLM sensitive
- flannelmouth sucker (*Catostomus latipinnis*), BLM sensitive

The BLM identified seven sets of attributes and indicators for evaluating the health of hydrological and aquatic systems in the D-E NCA. See Table 3.11 for a description of current condition in the D-E NCA.

In-channel habitats in the D-E NCA are in good condition, and streams are largely in balance with the sediment loads and geological land form setting in which they reside. Good mixes of riffles, runs, and pools exist and provide habitat diversity and complexity for a diversity of aquatic species. Flows within the Gunnison River are heavily regulated due to the presence of upstream reservoirs. This reduces, and alters the timing of, peak flows within the D-E NCA and limits the creation and maintenance of important microhabitats such as backwaters, side channels, and flooded bottomlands -- all important for native fishes.

Using historic stream-flow data from U.S. Geological Survey (USGS) gage No. 09152500 (Gunnison River near Grand Junction, CO), the BLM developed a rating system to evaluate the hydrologic regime of the Gunnison River (Figure 3.2). Ratings were derived from percentile rankings when compared to stream flow during the pre-dam period of record (e.g., monthly average of average daily flows represented by “natural” conditions or the pre-dam period of record versus monthly average of average daily flows represented in the current flow regime). The “natural hydrograph” is depicted by the monthly median value of the average daily mean for the pre-dam period of record.

The BLM assumes the “natural hydrograph” represents the highest benefit to resource values as both the timing and volume of seasonal stream flows are critical to development of stream morphologic conditions and aquatic habitat for native species. Channelization and riprapping along the banks of the Gunnison River has also altered natural stream sinuosity, morphology, and floodplain development further prevented the creation of microhabitats. It is recognized that BLM management actions alone will not alter the current rating, as stream flow in the Gunnison River is largely controlled by upstream and downstream water rights.



**Figure 3.2. Gunnison River Stream Flow at USGS Gage No. 09152500**

The Gunnison River within the planning area contains 87 percent native fishes (by total number of fish) including federally endangered species, BLM sensitive species, and other native fishes. As a result, the Gunnison River is currently considered to be in “good” condition with regard to overall species composition. Tributary streams contain mixes of both native and non-native fishes. The warm-water (downstream) portions of Escalante, Cottonwood, and Big Dominguez Creeks contain predominantly warm-water native fishes and are in “good” condition. The cold-water (upstream) reaches of Big and Little Dominguez, and Escalante and North Fork Escalante, and Cottonwood and Kelso Creeks provide good to excellent quality habitat. However, these streams are currently occupied primarily by non-native fish species, thus they are considered to be in “poor” condition.

Flows within the smaller tributary streams are largely natural, but variable, and this is based primarily on regional and local climatic conditions. Flows vary greatly throughout the year, with high flows occurring from snowmelt in late spring, and base flows in late summer through winter. Peak flows tend to occur from summer convective storms and are localized and very flashy. Late summer/fall flows are a factor for year-round occupations by fish and other aquatic wildlife.

The BLM has a working partnership with the Colorado Water Conservation Board (CWCB), evidenced in part by a MOU between BLM and the CWCB that establishes a framework for working cooperatively on water issues on BLM lands in Colorado. This partnership recently led to the establishment of instream flow water rights to support water-dependent values on Big and Little Dominguez Creeks. The BLM and the CWCB cooperated on gathering data and worked closely with stakeholders within the Big and Little Dominguez Creek watersheds to gain support for instream flow protection. The BLM then formally recommended that the CWCB appropriate instream flow water rights on the Creeks, the CWCB appropriated the recommended flows, and the two agencies worked together on developing an instream flow application and an accompanying enforcement agreement. The instream flow appropriation for Big Dominguez Creek and Little Dominguez Creek is unique, because it does not contain specific flow rates and timing. Rather, the CWCB applied for all annually available flow on the creeks, and developed a quantified estimate of future non-Federal water use for the private properties on the top of the Uncompahgre Plateau that are in and immediately adjacent to these two watersheds. The estimate was designed to allow land owners to maintain existing land uses and viable agricultural practices,

and considered relevant factors including elevation, climate, soils, water availability, and historic water use practices. This “development allowance” was restricted to a maximum annual volume that will allow natural hydrologic variability in these stream systems to continue.

**Table 3.11. Attributes for Evaluating Health of Aquatic Systems**

Attribute	Indicator	Data Source	Condition Rating	Rationale for Fair or Poor Condition Rating
Gunnison River channel movement	Percent channelization and riprap along banks	BLM GIS data	“Fair”	Natural sinuosity, channel migration, and floodplain development has been restricted by anthropogenic factors.
Gunnison River hydrologic regime/surface water	Hydrograph comparison	USGS water flow data	“Fair”	The timing and volume of stream flow peaks and base flows are altered from natural (pre-dam) conditions.
Presence/abundance of native fish in the Gunnison River	Percent native fish in Gunnison River	BLM and CPW fish sampling	“Good”	Not applicable
Tributary creek hydrologic regime/surface water	Hydrograph comparison	Best estimate based on specialist opinion and intermittent data	“Good”	Not applicable
Tributary creek warm-water fish composition	Percent native fish in warm-water reaches of tributary creeks	BLM and Division of Wildlife fish sampling	“Good”	Not applicable
Aquatic habitat connectivity	Miles of tributary creeks available for use by native warm-water species	Best estimate based on specialist opinion	“Good”	Not applicable
Cold-water fish composition	Percent of native fish in cold-water reaches	BLM and Division of Wildlife fish sampling	“Poor”	Non-native trout dominate the aquatic systems of the cold-water tributaries of the D-E NCA
Cold-water aquatic habitat quality	Percent of cold-water fish-bearing stream miles that rank as good in the Pfankuch stability rating	Best estimate based on specialist opinion	“Good”	Not applicable
<i>For more detail, see Appendix A, Planning for Priority Species and Vegetation.</i>				

### 3.2.2.2. Special Status Species and Natural Communities

Special status species are those species (plants, animals or fish) with populations that have declined to the point of substantial Federal or State agency concern. Special status species include:

- Any species that is listed, is a candidate for listing, or is proposed for listing as threatened or endangered by the USFWS or National Marine Fisheries Service under the provisions of the ESA.
- Any species designated by each BLM State director as sensitive, a category that is normally used for species that occur on Bureau-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management.

- Any species that is listed by the State of Colorado in a category implying potential danger of extinction.

Federally threatened and endangered species and designated critical habitat crucial to species viability are managed by the USFWS in cooperation with other Federal agencies to support recovery. For listed species that have not had critical habitat identified and designated, the BLM cooperates with the USFWS to identify and manage habitats to support the species.

The BLM also identified special natural communities within the D-E NCA, using information collected by the CNHP. Special natural communities were defined as those that meet CNHP's standards for exemplary (i.e., of high quality), or imperiled (i.e., rare). A description of these natural communities is included within this section of the Proposed RMP.

The BLM planning team went through an extensive process to consider priority biological species and communities so that future management could be based on a comprehensive understanding of species and habitat/vegetative community relationships. As part of this process, the BLM identified vegetation/habitat types and species (plants or wildlife) that would be priorities for management and would thus require special management consideration and attention. Seven vegetation/habitat types, covering nearly all of the D-E NCA, were selected as priorities. Desert bighorn sheep and Colorado hookless cactus were identified through this process as priority species, as they require special management consideration and attention beyond management of their broader habitat types. For this reason, these two species are considered *Priority Species* in the section below, followed by all other special status species. Habitat for non-priority special status species, fish and wildlife (including big game) are largely managed through management of the priority vegetation or habitat types listed in this section.

After identifying the key attributes and associated indicators of health for each priority species and vegetation the planning team established standards for each indicator so that its current condition could be summarized as "poor," "fair," "good," or "very good." The gap between current and desired condition were used to define objectives for management. Objectives were focused particularly on key attributes that were determined to currently be in "fair" or "poor" condition. These indicators should be considered additional to the Colorado Standards for Public Land Health, which the BLM is required to meet (or make progress toward meeting) in the State of Colorado. For more detail on indicators, please see Appendix A.

This planning process is based on the "Planning for Priority Species and Vegetation" training offered by the BLM's National Training Center.

## Desert Bighorn Sheep

The desert bighorn sheep (*Ovis canadensis nelsoni*), is a subspecies of bighorn sheep that occurs in seven states (CO, TX, CA, AZ, UT, NM, NV) across the desert Southwest regions of the United States. Smaller than their Rocky Mountain cousins, desert bighorn sheep are well adapted to living in the desert heat and cold. There is no documented evidence that desert bighorn sheep occurred in Colorado when European settlers first arrived. However, archeological evidence, the close proximity of historic desert bighorn populations in Utah, and suitable desert bighorn habitat in southwestern Colorado make it likely that desert bighorns did historically occur in southwestern Colorado in at least small numbers. (George, Kahn, Miller, and Watkins 2009, page 5). In contrast to deer and elk, bighorn sheep populations historically declined sharply during the early settlement years of the West and have never recovered. Fewer than 80,000 bighorn sheep

are believed to roam the west from Canada to Mexico, compared to an estimated 1.2 million head of bighorn that existed at one time (Krausman and Shackleton 2000). Desert bighorn sheep are considered by CPW as Tier 1 for management for inventory, habitat protection and improvement, disease prevention, and research (Holland and Broderick 2013), and are therefore managed as a BLM sensitive species.

The Dominguez Canyon desert bighorn herd is currently estimated to be the second largest of four herds or bands in Colorado. Table 3.12 shows the most recent population estimates for Colorado's desert bighorn herds (also see Map 3–11).

**Table 3.12. Numbers of Desert Bighorn Sheep by Herd in Colorado**

Hunting Unit	Location	Number
S64	Upper Dolores River	70
S63	Middle Dolores River	45
S56	Black Ridge	200
S62	Uncompahgre (Dominguez)	160
<i>Source: George, Kahn, Miller, and Watkins 2009; updated through B. Banulis, personal communication, September 6, 2012, and S. Duckett, personal communication, September 6, 2012.</i>		

All four Colorado bands were transplanted from out-of-State populations. The Dominguez herd was released into the Big Dominguez Creek drainage in 1983 (10 sheep from Arizona), 1984 (10 sheep from Arizona), and 1985 (21 sheep from Nevada in two transplants). Additional sheep releases occurred in the Roubideau Creek drainage in 1991 (18 sheep from Arizona) and 1993 (20 sheep from Nevada). In 1995, 181 sheep were counted during a June helicopter survey. In the late 1990's, the population was estimated to be approximately 250 sheep. A *Pasteurella* pneumonia outbreak occurred in the population in 2001-2002. In 2001-2002 very few lambs were observed and the population appeared to decline dramatically. Only 27 sheep (with a ratio of five lambs per 100 ewes) were observed during the 2002 helicopter survey. The population appeared to rebound in 2004 and 2005. In 2005, 100 sheep (with a ratio of 69 lambs per 100 ewes) were classified during coordinated helicopter and ground surveys (Watkins 2005). Currently, the population is estimated at 160 individuals. This falls between the middle to upper population goals for the herd established by CPW.

The BLM identified 3 sets of attributes and indicators to evaluate the health of desert bighorn sheep in the D-E NCA (Table 3.13). Although the herd's current population size is rated as "good," the D-E NCA's desert bighorn sheep have a current rating of "poor" for the potential for disease transmission due to overlap between desert bighorn sheep range and domestic sheep/goats.

**Table 3.13. Attributes for Measuring the Health of Desert Bighorn Sheep**

Attribute	Indicator	Data Source	Condition Rating	Rationale for Fair or Poor Condition Rating
Population structure and recruitment	Lamb to ewe ratio	CPW surveys	"Good"	Not applicable
Potential for disease transmission	Overlap of domestic sheep and goats with desert bighorn sheep	BLM and CPW GIS data	"Poor"	There is overlap between desert bighorn sheep range and domestic sheep allotments, as well as domestic goats
Population size	Five-year average of population size	CPW surveys	"Good"	Not applicable
<i>For more detail, see Appendix A, Planning for Priority Species and Vegetation.</i>				

Research has been rapidly evolving in regard to disease transmission between wild and domestic sheep. Most recently, research conducted out of Washington State documented transmission in a field setting (Lawrence et al. 2010). Working groups have formed periodically at national and regional levels to evaluate risks and develop management suggestions, often incorporating both scientific experts as well as stakeholders affected by scientific conclusions and management recommendations. Because the operating environment and exact mechanisms related to disease transmission in the field can be so complex and can require detailed laboratory testing to prove definitively, most of these working groups have put substantial effort into deliberately and carefully characterizing management conclusions related to disease, as well as the scientific research on which they are based. As an example, the USFS, the BLM Colorado State Office, Colorado Department of Agriculture, Colorado Woolgrowers, and the Colorado Division of Wildlife signed a memorandum of understanding in 2009 that included the following conclusions relating to disease (USFS 2009):

- Contact between bighorn sheep and domestic sheep increases the likelihood of respiratory disease outbreaks in bighorn sheep
- Not all disease outbreaks and reduced recruitment in bighorn sheep can be attributed to contact with domestic sheep

The Wild Sheep Working Group of the WAFWA recently updated a series of management recommendations designed to reduce the risk of association and disease transmission between wild and domestic sheep (Wild Sheep Working Group 2012). These recommendations include proactive mitigation measures for land management agencies and domestic sheep grazing operators.

The identification of organisms that cause pneumonia in bighorn sheep following contact with domestic sheep remains unresolved (Wehausen, Kelley, and Ramey 2011), possibly due to disease complexity (multiple pathogens) and the limitations of research tools. There is literature documenting pneumonia outbreaks and die-offs in bighorn sheep populations with no known recent prior contact with domestic sheep (Goodson 1982). However, documented pneumonia epizootics are absent in the large expanse of wild sheep range in Canada and Alaska where there have been almost no opportunity for direct or indirect contact with domestic sheep, suggesting that association between domestic and wild sheep is a causal factor in the introduction of these pathogens into wild sheep herds (Hoefs and Cowan 1979; Hoefs and Bayer 1983; Monello, Murray and Cassirer 2001; Jenkins et al. 2007).

There is uncertainty whether contact between bighorn sheep and domestic sheep is the only cause of disease transmission and subsequent population declines in bighorn sheep. Uncertainty among some researchers includes the following issues:

- The mechanisms and causal agents leading to epizootic disease events in bighorn sheep are not completely understood.
- The hypothesis that bighorn sheep have a high likelihood of contracting fatal respiratory disease following contact with domestic sheep has not been conclusively demonstrated in wildland conditions.
- Bighorn sheep die-offs have occurred in the absence of domestic sheep.
- Sources of error or omission and data limitations have not been addressed.



- Research evaluating disease transmission between the species lacks proper experimental design that is not accounted for.

Ward et al. (1997) did not conclusively attribute a bighorn sheep die-off in Nevada to disease transmission, although he did note that the die-off occurred after domestic sheep were detected on those ranges. The study also found *Pasteurella* spp. isolates in both species, which is suggestive of a disease transmission event. Miller et al. (2012) concluded that an invariant relationship between a single agent and field outbreaks has not yet been proven, in part due to methodological limitations and practical challenges associated with developing rigorous study designs. Miller et al. (2012) identified a need to develop predictive models for outbreaks, as uncertainty remains as to whether outbreaks are due to endemic or recently introduced agents.

Lack of evidence of disease transmission between domestic sheep and bighorn sheep in wildland environments is largely circumstantial. An increasing body of evidence demonstrates that bighorn sheep near domestic sheep are at risk for disease transmission, even though contact may not have actually been observed. Monello, Murray, and Cassirer (2001) concluded that bighorn sheep herds classified in a pneumonia-induced die-off category were located significantly closer (less than 15 miles) to federally managed domestic sheep grazing allotments than those in a non die-off category (more than 25 miles).

Where study findings infer disease transmission between the species, improper experimental design or other flaws in research design are sometimes identified as problematic. However, these studies have been published in recognized scientific publications and have undergone standard scientific peer review prior to publication (USFS 2010b). The analysis of impacts to bighorn sheep from domestic sheep grazing in this document rely on a large body of peer-reviewed and published literature, spanning several decades. While there are gaps in the knowledge base regarding the causal factors and mechanisms of bighorn sheep die-offs and disease transmission between these species, the vast majority of literature supports the potential for inter-species disease transmission, documents bighorn sheep die-offs near domestic sheep, and supports the management option of keeping these species separate to prevent disease transmission (Wild Sheep Working Group 2012; Wehausen, Kelley, and Ramey 2011). Scientists with varying viewpoints recommend that the species be kept separate until disease transmission is better understood (USFS 2010b; Foreyt 1994; Foreyt, Snipes, and Kasten 1994).

When domestic and wild sheep or goats have opportunities to intermingle (depending on proximity of domestic to wild populations), and when population trends indicate that disease may be a factor in a population, the risk of disease transmission becomes a management concern. Domestic sheep and goats are present in the D-E NCA in proximity to desert bighorn, making the risk of disease transmission to wild sheep a management concern. There are currently five domestic sheep allotments within the D-E NCA, four of which fall within desert bighorn sheep range (see livestock grazing section for more details). Risk of association assessments using two spatially explicit models were conducted for livestock allotments to determine the likelihood of association between desert bighorn sheep and domestic sheep on all allotments within the D-E NCA (see Appendix C). Of the 17 allotments (all livestock types) in the D-E NCA, 8 were rated as “moderate risk” of association and 9 were rated as “high risk” of association using this assessment (Map 3–12). For the five domestic sheep allotments, one was rated as “moderate risk” and four were rated as “high risk.” It is possible for *Pasteurella* disease transmission from domestic cattle to bighorn sheep, but is very rare (Drew, Rudolph, Ward, and Weiser 2014). While disease transmission from domestic cattle to bighorn is unlikely, both current cattle and sheep

allotments were assessed for risk of association to inform management in the future if allotments were to be considered for a change in livestock from domestic cattle to sheep.

The presence of domestic goats in Little Dominguez Canyon is a unique aspect of the Dominguez Canyon Wilderness due to the continued occupancy of a homestead that was deeded to the BLM by Mr. Billyie E. Rambo. He continues to maintain his residence in the Wilderness under a “life lease” agreement, and has maintained a small flock of goats in the bighorn core area, since before the bighorns were introduced. Association between goats and wild bighorn sheep is a concern from a disease transmission standpoint, because goats are not as “gregarious” (i.e., likely to group together) as some breeds of domestic sheep. In addition, the lack of a herder or monitor makes it difficult to detect when intermingling occurs.

CPW has documented association between domestic goats and desert bighorn sheep in the Dominguez Canyon Wilderness (Plank, personal communication, 2012). Domestic sheep permittees within the D-E NCA have reported very little commingling between desert bighorn sheep and domestic sheep within the D-E NCA. Domestic sheep grazing is a historical use of the D-E NCA and such grazing was in existence prior to the initial transplants of bighorn sheep into the area in 1983. However, the results of the models presented in Appendix C suggest the potential for association between domestic and wild sheep is highly likely within the D-E NCA.

## Colorado Hookless Cactus

Colorado hookless cactus (*Sclerocactus glaucus*) was identified as a priority species for the D-E NCA, as it requires the BLM to identify special management beyond management of its habitat. Listed as threatened under the ESA, the Colorado hookless cactus was formerly called the Uinta Basin hookless cactus. In 2009, USFWS determined that the Uinta Basin hookless cactus (*S. glaucus*) was three distinct species: *S. glaucus*, *S. brevispinus*, and *S. wetlandicus* (*Federal Register*, 74 FR 47112, September 15, 2009). The small, barrel-shaped cactus has straight spines (hence the name “hookless”) and pinkish-purple flowers.

Habitat for this species includes rocky hills, mesa slopes, and alluvial benches in desert shrub communities at elevations from 4,500 to 6,000 feet (Lyon and Kuhn 2010). The Uinta Basin Recovery Plan estimated that 15,000 individual plants occur in the Gunnison River population (USFWS 1990). Recent surveys conducted by the BLM near Delta, Colorado, suggest total population size and distribution may be much larger than originally thought. In 2010, the USFWS estimated that Colorado had a known population of 19,000 individuals of Colorado hookless cactus in Delta, Montrose, Mesa and Garfield Counties (USFWS 2010). One of two population centers is found on alluvial river terraces of the Gunnison River from near Delta, Colorado to southern Mesa County, Colorado (USFWS 2010). Although data collected by the BLM and CNHP show that there are 101 principal occurrences of *S. glaucus* in Colorado, 40 are within the D-E NCA.

In the most current CNHP survey of D-E NCA for hookless cactus, all A-ranked occurrences are in the Uncompahgre Field Office side of the D-E NCA, along the Escalante Road east of the Gunnison River, in Wells Gulch and on McCarty Bench, west of the Gunnison River (Lyon and Kuhn 2010). B-ranked occurrences inside the D-E NCA include Leonard’s Basin, Big Dominguez Creek and Cactus Park (Lyon and Kuhn 2010). The difference between A and B ranking is excellent versus good viability.

Threats to the species within the D-E NCA include habitat degradation as a result of encroachment of non-native halogeton and cheatgrass, off-road vehicle use, collection, as well as **habitat alteration** by livestock. Predation by rabbits and cactus-borer beetle (*Moneilema semipunctatum*) may also be a significant source of mortality (USFWS 2010). Additional studies are currently underway to determine the long-term, population-level effects of livestock grazing on Colorado hookless cactus.

The BLM identified three sets of attributes and indicators for evaluating the health of Colorado hookless cactus populations in the D-E NCA (Table 3.14). **All** of these attributes are currently ranked as “good.”

**Table 3.14. Attributes for Measuring the Health of Colorado Hookless Cactus**

Attribute	Indicator	Data Source	Condition Rating	Rationale for Fair or Poor Condition Rating
Habitat quality	Percent of sites with less than 10% relative cover of invasive plants	CNHP specialist opinion	Good	Not applicable
Population structure and recruitment	Percent of populations with at least 5% of the population being small individuals	CNHP specialist opinion	Good	Not applicable
Population size	Twenty year trend in number of individuals in known populations	CNHP	<b>Good</b>	The number of individuals is <b>increasing</b> within multiple populations in the D-E NCA

*For more detail, see Appendix A, Planning for Priority Species and Vegetation.*

## Other Special Status Species

### Plants

Within the D-E NCA, the distribution and presence of most of the special status species is known from CNHP inventories, project-related biological surveys, land health assessments, and other information (Map 3–13). Seven special status plant species (six BLM sensitive, one federally threatened) have either been documented or have suitable habitat associated with the D-E NCA. The six BLM sensitive species (this excludes Colorado hookless cactus, a federally threatened species that is described in the preceding subsection) are described below.

Habitat for the *Grand Junction milkvetch* includes sparsely vegetated sites, often within the Chinle and Morrison formations and selenium-bearing soils, in pinyon-juniper and sagebrush communities at 4,800 to 6200 feet in elevation. Plants often occur on rocky slopes and in canyons. Current knowledge indicates that the species is confined to the east side of the Uncompahgre Plateau. According to the 2010 CNHP D-E NCA Rare Plant Survey, 10 populations are scattered in the Big and Little Dominguez canyons, Bar X Bench, Triangle Mesa, **Gibbler Mountain**, and Escalante Canyon. CNHP element occurrence is ranked excellent and good.

Habitat for the *Naturita milkvetch* includes the cracks and ledges of sandstone cliffs and flat bedrock areas with shallow soil development, within pinyon-juniper woodlands at elevations of 5,000 to 7,000 feet. This species occurs on mesas adjacent to the Dolores River and its tributaries in Montrose and San Miguel Counties. Recent surveys have found additional populations in the Mesa County portion of the D-E NCA, and the species appears to be more abundant than originally thought. There are two known Naturita milkvetch occurrences, totaling approximately

100 individual plants within the D-E NCA. The highest ranking occurrence (Good) is in Unaweep Canyon.

*Eastwood's monkey-flower* occurs exclusively in hanging gardens in the shallow alcoves or horizontal cracks of sandstone canyon walls at 4,700 to 5,800 feet in elevation. Several subpopulations occur in a series of seep alcoves along Escalante Canyon. CNHP records indicate there are approximately seven principal occurrences in the D-E NCA. All appear to be on the north slopes of Escalante Creek. The majority of the occurrences are A-ranked by CNHP.

The *Montrose bladderpod* occurs in sandy-gravel soil comprised mostly of sandstone fragments over Mancos Shale adobe soils, primarily in pinyon-juniper woodlands or pinyon-juniper and salt desert scrub mixed communities at 5,800–7,500 feet elevation. The species occurs less often in sandy soils in sagebrush steppe communities. Distribution centers are on the Uncompahgre River Valley in south Montrose County and north Ouray County, with most occurrences near the town of Montrose. However, an outlying subpopulation persists near Escalante Canyon just south of the Delta County line. CNHP ranks the species as Imperiled, and the majority of occurrences are A-ranked.

Habitat for *Colorado desert parsley* occurs in adobe hills and plains on rocky soils derived from Mancos Formation shale, primarily in shrub communities dominated by sagebrush, shadscale, greasewood, or scrub oak communities at 5,500–7,000 feet elevation. This species has not yet been documented in the D-E NCA but has the potential to occur. CNHP ranks the species as Imperiled/Vulnerable, with individual occurrences ranging from A-ranking to C-ranking.

The *Osterhout's cryptantha* occurs in reddish-purple decomposed sandstone, in barren dry sites. Elevation ranges from 4,500 to 6,100 feet. In Colorado the species is limited to Mesa County, with the main populations centering on Rabbit Valley and Gateway. Although the species has not been recorded within the D-E NCA, suitable habitat is present.

## Reptiles

The following special status reptiles (all State species of concern and BLM sensitive species) occur or have the potential to occur in the D-E NCA:

*Longnose leopard lizards* are found in stands of greasewood and sagebrush with a large percentage of open ground. The species has not been recorded in the D-E NCA but is likely to occur in the lower elevations of the D-E NCA.

The *midget faded rattlesnake* has been recorded in the D-E NCA. Observations in the Grand Junction Field Office suggest the species is typically observed in or near rocky outcrops.

The *milk snake* has not been recorded in the D-E NCA but has been recorded adjacent to the Gunnison and Colorado Rivers upstream and downstream of the D-E NCA. The species utilizes a wide range of habitats and is likely to occur in the D-E NCA.

## Amphibians

Three special status amphibian species occur or have the potential to occur in the D-E NCA. All three of these species are both State species of concern and BLM sensitive species.

The *canyon tree frog* is largely restricted to riparian areas in rocky canyons. It is typically found along streams among medium to large boulders, from desert to desert grassland and into oak-pine

forests. It is found in rocky canyons throughout the D-E NCA. The species is common in Escalante Canyon and in Big and Little Dominguez Canyons.

The *Great Basin spadefoot* occurs mainly in sagebrush flats, semi-desert shrublands, and pinyon-juniper woodland. This species digs its own burrow in loose soil or uses those of small mammals, and it breeds in temporary or permanent water, including rain pools, pools in intermittent streams, and flooded areas along streams. The species has not been confirmed in the D-E NCA but is likely to occur.

The *northern leopard frog* generally inhabits permanent water with rooted aquatic vegetation. The species has been observed along the Gunnison River within the D-E NCA during surveys conducted in 2008.

## Birds

There are 16 special status bird species that occur, or have the potential to occur, in the D-E NCA. These are described below.

The *northern goshawk*, a BLM sensitive species, is not known to occur on the D-E NCA. Most breeding habitat likely exists on National Forest Service lands adjacent to the D-E NCA. Foraging may occur within the D-E NCA, especially during the winter. Breeding habitat in the D-E NCA is generally marginal for this species and is likely restricted to isolated stands of ponderosa pine, Douglas-fir and aspen.

The *western burrowing owl*, a BLM sensitive species, has the potential to occur in active prairie dog towns in the D-E NCA, within the desert shrub/saltbush vegetation type. Although survey efforts have taken place in adjacent field offices (Beason 2008; Boyle 2012) and have located active nests, surveys have not been conducted in the D-E NCA, and no known burrowing owl nests are currently documented there.

The *Mexican spotted owl*, a federally threatened species, occurs in southwestern Colorado and has never been recorded within the D-E NCA. Although potential habitat for the species does occur in the D-E NCA, the closest designated critical habitat for the species occurs approximately 30 miles southwest of the D-E NCA boundary in the San Juan Mountains of Utah.

*Peregrine falcons*, which are a BLM sensitive species, occur throughout Colorado. Much of the canyon habitat within the D-E NCA could be considered potential nesting habitat. There are three known occurrences within the D-E NCA: Escalante Canyon, lower Dominguez Canyon and Unaweep Canyon (Map 3–14).

The *golden eagle*, protected under the Bald and Golden Eagle Protection Act, occurs throughout Colorado. Much of the canyon habitat within the D-E NCA could be considered potential nesting habitat. Four territories are in the D-E NCA: McCarty Bench, Broughton, Escalante Creek, and Dry Fork of Escalante (Map 3–14).

*Bald eagles*, which are protected under the Bald and Golden Eagle Protection Act and are a BLM sensitive species, occur throughout western Colorado during winter months. Winter concentration habitat (as mapped by CPW) is located along the Gunnison River within the D-E NCA. Until recently, no known bald eagle nests were in the D-E NCA area. Several bald eagle nests have been documented in the vicinity of Delta, CO, including one along the Gunnison River, just outside the D-E NCA boundary and in the Unaweep Canyon area in the northeast corner of D-E NCA (see Map 3–14).

Habitat for the *ferruginous hawk*, a BLM sensitive species, occurs within the D-E NCA in the desert shrub/saltbush vegetation type. The species has not been observed in the D-E NCA.

Various species of migratory birds summer, winter, or migrate through the D-E NCA. The habitat diversity provided by broad expanses of pinyon juniper, sagebrush, and saltbush vegetation zones support numerous species of birds. Western Colorado, including the D-E NCA, is considered migratory habitat for the *white-faced ibis* and *American white pelican*. Breeding of these species has not been recorded in the D-E NCA.

Habitat for the *western yellow-billed cuckoo*, which is proposed as threatened under the ESA and is a BLM sensitive species, occurs along the Gunnison River within the D-E NCA. Yellow-billed cuckoos have not been recorded in the D-E NCA. The Rocky Mountain Bird Observatory has recorded two sightings approximately 25 miles east and approximately 5 miles north of the D-E NCA. However, the species is difficult to detect and may migrate through the area or remain in suitable cottonwood habitat within the D-E NCA. Breeding of yellow-billed cuckoos in the area was confirmed along the North Fork of the Gunnison River.

The range of the *Southwestern willow flycatcher*, a federally endangered species, extends into southwestern Colorado but is not believed to include the D-E NCA. The species has never been recorded in the D-E NCA and the USFWS no longer lists the species as occurring in the D-E NCA.

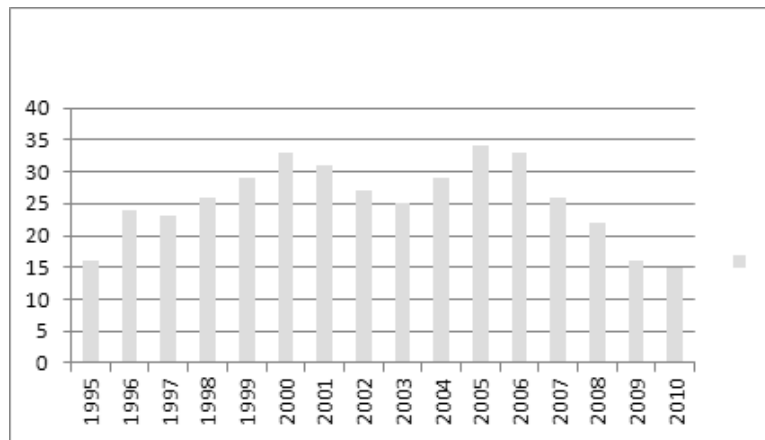
The *long-billed curlew*, a State species of concern and BLM sensitive species, typically breeds in short grass and mixed-grasslands. Breeding has also been recorded in croplands and desert grasslands northwest of Grand Junction. The species is not known to occur in the D-E NCA, but potential habitat exists in the Hunting Ground area.

*Brewer's sparrow*, a BLM sensitive species, is commonly associated with sagebrush shrublands and is likely to occur in sagebrush habitat within the upper elevations of the D-E NCA.

The *black swift*, a BLM sensitive species, nests within close proximity to falling water on a cliff. It places nests in small cavities within the spray zone or directly behind sheets of falling water. The D-E NCA provides a limited amount of potential nesting habitat for the species in Big Dominguez and Escalante Creeks, but it is not known to occur in the D-E NCA.

*Columbian sharp-tailed grouse*, a BLM sensitive species, does not currently occur in the D-E NCA. Though portions of the D-E NCA are mapped as historic habitat for the species, it is most commonly found in high elevation grassland areas interspersed with serviceberry, chokecherry, oak brush, sagebrush, snowberry, and aspen. This habitat type is not found within the D-E NCA.

The Cactus Park area of the D-E NCA is mapped as historic range as well as designated critical habitat (potential) for the *Gunnison sage-grouse*, which is listed as threatened under the ESA (Map 3–14). The Pinyon Mesa population of Gunnison sage-grouse occurs north of the D-E NCA. A conservation plan for this population was completed in 2000 (Pinyon Mesa Gunnison Sage-Grouse Partnership 2000). The number of males attending leks during annual lek counts of the Pinyon Mesa population has been declining since 2005 (see Figure 3.3 below). This population was augmented in 2010 with grouse from the Gunnison area. These birds were equipped with radio transmitters, and data obtained from these birds suggest the Cactus Park area of the D-E NCA is currently used as wintering habitat for the Pinyon Mesa population of Gunnison sage-grouse (personal communication with Neubaum, 2011). The BLM is managing for Gunnison sage-grouse habitat through management of the sagebrush shrublands vegetation type. See Table 3.6 for current conditions of this vegetation type.



**Figure 3.3. Annual High Male Lek Count for the Pinyon Mesa Population**

## Mammals

There are six special status mammal species that occur or are likely to occur within the D-E NCA. Note that information regarding desert bighorn sheep, one of the six mammal species, can be found in a separate subsection.

*White-tailed prairie dog*, a BLM sensitive species, is considered a keystone species within the desert shrub/saltbush vegetation and habitat type in the D-E NCA. This habitat type is found in the lower elevations of the D-E NCA, primarily in the area known as the Hunting Ground, between the Gunnison River and U.S. Highway 50 (Map 3–14). Currently the species is believed to occupy less than 10 percent of its suitable habitat in the D-E NCA, suggesting population numbers are down likely as a result of disease and/or shooting by visitors to the D-E NCA.

*Kit fox*, also a BLM sensitive species, currently inhabits areas north of the town of Delta and have the potential to inhabit areas of desert shrub/saltbush vegetation type in the Hunting Ground area. However, the species has not been documented in the D-E NCA.

Sensitive bat species are likely to utilize habitat throughout the area including snags, caves/crevasses and abandoned mines. Of the sensitive bat species, *Townsend's big eared bat* has been recorded along East Creek on the northern boundary of the D-E NCA. *Big free-tailed* (Escalante Forks), *Townsend's big-eared* (Escalante Forks; Escalante Boat Launch Bridge), and *fringed myotis* (Escalante Forks) bats have been captured or detected acoustically (Hayes, Ober, and Sherwin 2009).

Four other special status mammal species do not currently occur within the D-E NCA, but the D-E NCA contains either suitable habitat or could provide a corridor for dispersal. These species are *black-footed ferret*, *Canada lynx*, *Gunnison prairie dog* and *North American wolverine*.

## Fish

There are eight special status fish species that occur or have the potential to occur in the D-E NCA. All of these species, with the exception of the *green lineage cutthroat trout*, are warm-water fish species. These warm-water fish currently inhabit or historically inhabited the Gunnison River and the lower reaches of tributary creeks within the D-E NCA.

*Bonytail*, a federally endangered species, likely reside within the D-E NCA within the Gunnison River. Bonytail are a larger main-stem river fish that prefer pool and eddy habitats. It is thought that flooded bottomland habitats are important growth and conditioning areas for the species, particularly as nursery habitats for young. Threats include stream-flow regulation, habitat modification, predation by non-native fishes, pesticides and pollutants.

*Humpback chub*, a federally endangered species, is not known to occur within the D-E NCA. The nearest known population is downstream near the Colorado-Utah border on the Colorado River. However, they are addressed in this RMP, because they would be impacted by management actions that result in water depletions. They are a large main-stem river fish that prefer deep, swift, canyon-bound regions of the larger rivers within the Colorado River Basin. Adults require eddies and sheltered shoreline habitats maintained by high spring flows. Young require low velocity shoreline habitats, including eddies, and backwaters, which are more prevalent under base flow conditions. Threats include stream-flow regulation, habitat modification, predation by non-native fishes, pesticides and pollutants.

*Razorback sucker*, a federally endangered species, resides in the D-E NCA within the Gunnison River and have been collected periodically during sampling efforts. The D-E NCA is within Designated Critical Habitat for this species. Razorbacks prefer warm-water reaches of large rivers within the Colorado River Basin. Adults require deep runs, eddies, backwaters, and flooded off-channel environments in spring; runs and pools often in shallow water associated with submerged sandbars in summer; and low velocity runs, pools, and eddies in winter. Young require nursery environments with quiet, warm, shallow water such as tributary mouths, backwaters, or inundated floodplain habitats. Threats include stream-flow regulation, habitat modification, competition with and predation by non-native fish, pesticides and pollutants.

*Native cutthroat trout* The status of cutthroat trout in Colorado has been in a state of flux for some time. However, recent research on cutthroat trout genetics and historic stocking practices (Metcalf et al. 2007, 2012) and new research on cutthroat trout meristics (Bestgen, Rogers, and Granger 2013) across the State of Colorado has emerged. On the basis of this new research, the cutthroat trout that is native to the D-E NCA is currently called the green lineage cutthroat trout. This lineage is native to the Colorado, Dolores, and Gunnison River basins in western Colorado. It currently resides in Kelso Creek and North Fork Escalante Creek within the D-E NCA. Research also suggests that the true *greenback cutthroat trout*, a federally threatened species, was never found in the D-E NCA and is native to the South Platte River drainage east of the Continental Divide. However, until such time as the USFWS conducts status reviews, determines listable entities, and makes determinations on the ESA status of cutthroat trout lineages in the State, or changes its position regarding green lineage cutthroat trout populations residing west of the Continental Divide, the Service is recommending that Federal land management agencies continue to treat green lineage cutthroat trout as threatened.

Given the recent research that has helped to clear up native cutthroat trout distribution across the State, CPW, the USFS, and the BLM are partnering to consider a project to replace non-native rainbow trout with locally native green lineage cutthroat trout in the upper portions of the Big Dominguez Creek watershed, including BLM lands located within the D-E NCA. Cutthroat trout require cold, clear, well-oxygenated water with a good mix of pool, riffle, and run habitats. Adult fish spawn in the spring and need clean gravel in which to lay eggs. They feed on a variety of stream and terrestrial insects.



*Colorado pikeminnow*, a federally endangered species, reside within the D-E NCA within the Gunnison River and have been periodically collected during sampling efforts. The D-E NCA is within Designated Critical Habitat for this species. Colorado pikeminnow prefer larger river habitats but are known to use smaller tributary streams throughout the Colorado River Basin. Adults require pools, deep runs, and eddies maintained by high spring flows. Young require nursery habitats including backwaters that are restructured by high spring flows and maintained by relatively stable base flows. Threats include stream-flow regulation, habitat modification, competition with and predation by non-native fishes, pesticides and pollutants.

*Roundtail chub*, a BLM sensitive species, reside primarily within the main-stem Gunnison River within the D-E NCA. However, adults use the warm-water, lower elevation portions of the larger tributary streams (Cottonwood Creek, Escalante Creek, lower Big Dominguez Creek, Kannah Creek, and East Creek) during the spring as spawning areas. Some adults may reside in the larger tributary streams year-round. Young use the smaller streams as nursery habitats before generally returning to the mainstem Gunnison River. This species prefers runs, eddies, and deep complex pool systems with cover including woody debris and rocks. They feed on a variety of aquatic and terrestrial invertebrates.

*Bluehead sucker*, a BLM sensitive species, reside in the Gunnison River and the warm-water lower elevation portions of the larger tributary streams within the D-E NCA. Adults use the tributary streams for spawning and adult populations may exist in the larger tributaries year-round. Bluehead sucker prefer warm to cool streams with rocky substrates. Adults use deeper pool habitats with good cover, whereas young prefer near shore, low velocity habitats. They eat algae, detritus, plant debris, and some aquatic insects.

*Flannelmouth sucker*, a BLM sensitive species, reside in the Gunnison River and the warm-water lower elevation portions of the larger tributary streams within the D-E NCA. Habitat includes deep pools, deep runs, and riffles with gravel, rock, sand, or mud substrates. Adults prefer deeper riffles and runs, whereas young prefer quiet, shallow riffles and near shore eddies. They feed on algae, detritus, plant debris, and aquatic insects.

## Special Natural Communities

The CNHP collects information regarding rare and high quality vegetative communities, in addition to information collected regarding rare species. For the purposes of this Proposed RMP, the BLM defined unique vegetative communities to be those that meet CNHP's standards for exemplary communities, meaning of high quality, or imperiled communities, meaning rare. Ancient vegetation is also considered for the purposes of this Proposed RMP to be a special natural community. Imperiled communities fall into one of three categories: critically imperiled, imperiled or vulnerable. Although these vegetative communities are not special status species, they are included within this section of the Proposed RMP.

Within the D-E NCA, four exemplary natural communities are currently documented in the most recent CNHP report (see Table 3.15). Two of these communities are riparian vegetation communities (those in Cottonwood Canyon and Big Dominguez Canyon), one community is associated with natural seeps in the walls of Escalante Canyon, and one is an exemplary desert shrub community in Rattlesnake Gulch. The hanging gardens within Escalante Canyon are also considered imperiled or vulnerable.

**Table 3.15. Exemplary and Imperiled Native Vegetation Communities in the D-E NCA**

General Location	Natural Community Type	Quality Status	Rarity Status
Cottonwood Canyon	Narrowleaf cottonwood/skunkbush	Exemplary	Not imperiled
Upper Big Dominguez Canyon	Cottonwood riparian forest	Exemplary	Not imperiled
Rattlesnake Gulch	Cold desert shrublands	Exemplary	Not imperiled
Escalante Canyon	Hanging gardens	Exemplary	Imperiled
Ninemile Hill	<i>Juniperus osteosperma</i> / <i>Hesperostipa comata</i> wooded herbaceous vegetation	Not exemplary	Critically imperiled
Lower Sawmill Mesa	<i>Juniperus osteosperma</i> / <i>Hesperostipa comata</i> wooded herbaceous vegetation	Not exemplary	Critically imperiled
Escalante Canyon	<i>Juniperus osteosperma</i> / <i>Hesperostipa comata</i> wooded herbaceous vegetation	Not exemplary	Critically imperiled
Source: Lyon and Kuhn 2010			

An inventory of ancient vegetation in the D-E NCA has not been completed. It is likely that some stands of ancient pinyon-juniper woodlands can be found in the higher elevations of the D-E NCA.

### 3.2.2.3. Non–Special Status Fish and Wildlife

This section discusses the current condition of fish and wildlife species, excluding priority and special status species. Note that this section is not intended to be a comprehensive list of species found within the D-E NCA.

Within the D-E NCA, the presence and interspersions of many habitat types support a large number of fish and wildlife species. Terrestrial species use all of the vegetation types discussed in the Priority Vegetation and Habitats section. Elk, mule deer, pronghorn, bighorn sheep, mountain lion, raptors, and many non-game species are found within the D-E NCA. The diversity and populations of fish and wildlife throughout the D-E NCA provide considerable recreational opportunity and economic benefit.

The key terrestrial wildlife species are primarily herptiles (reptiles and amphibians), birds, and mammals. Adequate populations of terrestrial invertebrates are assumed when populations of the vertebrate groups that prey on invertebrates are healthy, as they are in the D-E NCA.

The D-E NCA has not had oil and gas development and is now withdrawn from mineral entry. In addition, historical uranium mining activity in the D-E NCA was limited. For those reasons, historic and current impacts to wildlife from energy development are minimal. A good portion of the D-E NCA is a designated wilderness and was a wilderness study area prior to designation. As a result, these areas have minimal human impacts. This lack of industrial disturbance presents a unique opportunity to preserve wildlife habitat into the future.

## **Fish**

In addition to those species addressed in the special status species section, speckled dace are native fish in the Gunnison River and the lower and mid-range portions of the perennial tributary streams. Non-native fishes documented in the Gunnison River include white sucker, common carp, longnose sucker, fathead minnow, red shiner, rainbow trout, brown trout, and channel catfish. In select tributary streams rainbow and brown trout, and to a lesser degree, white suckers are present (Map 3–10).

## **Reptiles and Amphibians**

The majority of reptiles occur in lower elevations and in drier habitats such as sagebrush shrublands, greasewood flats, and pinyon-juniper woodlands. Reptiles observed in the D-E NCA include collared lizard, sagebrush lizard, tree lizard, side-blotched lizard, prairie plateau lizard, short-horned lizard, plateau striped whiptail, midget faded rattlesnake, desert striped whipsnake, bull/gopher snake, and western terrestrial garter snake. The BLM conducted herpetological surveys in 2008 and 2009. Because the focus of these surveys was on amphibians, it is notable that the only garter snake observed was the western terrestrial garter snake (no blacknecked or wandering garter snakes were observed).

Amphibians are associated with rivers, streams, ponds, and springs. CPW and BLM surveys document the presence of canyon, red spotted toad, northern leopard frog, tiger salamander and woodhouse toad across the D-E NCA planning area. Non-native bullfrogs were also documented in areas within the D-E NCA.

## **Birds**

Important nesting areas extend along much of the Colorado and Gunnison Rivers for water birds, with brood concentration areas reflecting the location of important feeding areas. The majority of the areas used occur on private agricultural lands along the Gunnison River, not on D-E NCA-managed lands. The key water bird species include great blue herons, geese, several species of ducks and sandhill cranes. Canada geese and other waterfowl species winter along the Gunnison River. Important foraging areas occur on private lands in agricultural areas within the river corridor -- both within and adjacent to the D-E NCA. Sandhill cranes use areas within the D-E NCA as a migratory stopover in the fall and spring.

Raptors in the D-E NCA include eagles, falcons, hawks, and owls. Because they are conspicuous and occur in fewer numbers than their prey, they serve as important indicators of overall ecosystem health. Data are maintained by CPW on observations of most raptor species and several species are tracked individually. Of particular note with regard to BLM habitat management policies, are the concentrations of raptors (particularly bald eagles and peregrine falcons) along the Gunnison River.

Blue grouse, wild turkey, and the Gunnison sage-grouse (a species listed as threatened under the ESA) occur in the D-E NCA. High elevation forested zones in the upper elevations of the planning area provide habitat for nesting blue grouse. Turkeys occur throughout the D-E NCA but are found primarily in higher elevation areas. Chucker and other introduced game birds occur at lower elevations in the D-E NCA.

## Ungulate Species

The four primary big game species in the D-E NCA are elk, mule deer, desert bighorn sheep (discussed in a separate section) and pronghorn.

Pronghorn occur in the lower elevation desert shrub/saltbush areas of the D-E NCA, primarily in the Hunting Ground area (Map 3–15). The D-E NCA falls within Data Analysis Unit (DAU) A-27 (Delta) for the pronghorn. This DAU is bordered by U.S. Highway 50 and the Uncompahgre Plateau and runs from Whitewater to Ridgway. In 2009, the pronghorn population in this unit was roughly estimated at 150-175 individuals and is expected to be declining due to poor habitat conditions. The current pronghorn population is roughly estimated to be 85 individuals. The population objective for the area is 350.

The overall range of mule deer includes the entire D-E NCA (Map 3–16). Summer range is found along the Uncompahgre Plateau, production occurs in concentrated areas within the summer range on the Uncompahgre Plateau. Winter range includes the majority of the lower elevation slopes around the Uncompahgre Plateau, including those within the D-E NCA. The D-E NCA is within mule deer DAU D-19 (Uncompahgre) for the CPW, and GMU 62. The DAU D-19 2013 post-hunt population estimate was 17,300, and the deer population has been declining since the winter of 2007-08; however, in the last two years, the population has bottomed out and is showing a slight increase. The CPW estimated 24,700 deer in DAU D-19 in 2009, which is below the population objective of 36,000-38,000.

The overall range of elk is the higher elevations of the D-E NCA (Map 3–17). Summer range is found on Forest Service lands on the Uncompahgre Plateau. Calf production occurs in concentrated areas on the Uncompahgre National Forest, including a small portion of the D-E NCA. Winter range includes the lower elevation slopes around the Uncompahgre Plateau including those in the D-E NCA. No major migration corridors have been identified within the D-E NCA. The D-E NCA is within elk DAU E-20 for CPW, and Game Management Unit (GMU) 62. These units are designated and surveyed by the CPW and intended to encompass one herd's range throughout the year. The CPW estimated 10,680 Elk DAU E-20 in 2009, which is above the target population of 8,500-9,500 elk.

## Other Mammals

The largest populations of black bears live in areas where there is Gambel's oak and aspen, near open areas of chokecherry and serviceberry bushes. Although black bears eat some meat and insects, most of their diet is fruit, nuts, and vegetation. Consequently, their annual behavioral and physiological cycle is tied to the annual cycle of plant growth and fruiting. There is summer and fall habitat for bears in the D-E NCA. Depending on the season, food supply and gender, black bears may weigh anywhere from 100 to 450 pounds.

Mountain lions are most abundant in foothills, canyons or mesa country. They occur in low densities (1-5 per 40 square miles), with adult sex ratio of about 2 females per male. Female home ranges average 54 square miles, whereas male home ranges average 108 square miles. Mountain lions are solitary except for breeding associations lasting 1-6 days. Active year-round, the mountain lion's staple diet is deer. They also feed on other ungulates, coyotes, bobcats, porcupines, rabbits and other medium sized mammals. Mountain lions are hunted in the D-E NCA.

Coyotes live statewide in Colorado and in many areas are quite common. They forage for birds, eggs, mice, rabbits, carrion of large wild mammals or livestock, insects and fruit. Home ranges of coyotes are highly variable. Food availability is a major factor influencing size of home ranges and social organization. Coyotes show great variation in their social organization: some living singly, others in pairs (usually mates), and some live in packs.

### 3.2.2.4. Noxious and Invasive Weeds

The presence of weeds can be viewed as an indicator of the vegetative health of an ecosystem. Extensive presence of weeds can be seen as an indicator of disturbances in an ecosystem.

As of 2008, the entire D-E NCA area, with the exception of the Gunnison River floodplain, was intensively surveyed for noxious weeds (Map 3–18). On the northern side of the D-E NCA, inventories were completed during the 2000 field season by BLM crews. Inventories were completed on the southern side of the D-E NCA in 2008. In the State of Colorado, weeds are classified into a system on the basis of urgency of eradication efforts. The focus of the inventory (survey) was primarily Colorado List A and B species, and a few List C species that are rare to the GJFO and UFO areas.

- Class A: Weed species designated by the Commissioner of Agriculture, for eradication.
- Class B: Weed species for which the Commissioner (in consultation with the State noxious weed advisory committee, local governments, and other interested parties) develops and implements State noxious weed management plans designed to stop their continued spread.
- Class C: Weed species for which the Commissioner (in consultation with the State noxious weed advisory committee, local governments, and other interested parties) will develop and implement State noxious weed management plans designed to support the efforts of local governing bodies to facilitate more effective integrated pest management on private and public lands. The goal of such plans will not be to stop the continued spread of List C species but to provide additional education, research, and biological control resources to jurisdictions that choose to require management of these species.

The BLM coordinates with counties and other entities in and around the planning area in implementing an integrated pest management program. This cooperative effort supports the integrated pest management program and promotes the success of Early Detection/Rapid Response, and the treatment and re-treatment of small and large patches of noxious and or invasive weeds. A coordinated strategy means that there are more people looking for and treating noxious and invasive weeds in a strategic manner on public lands (Map 3–19).

Table 3.16 summarizes the results of surveys within D-E NCA. As noted in the table, some Colorado “B” weeds are considered “A” weeds on BLM lands within the D-E NCA. These weeds are rare to the area and management of infestations is feasible for the weed program.

**Table 3.16. State Listed Noxious Weeds Known To Occur in the D-E NCA**

Species	Category	Primary Occurrence
Cheatgrass ( <i>Bromus tectorum</i> )	List C	Throughout the D-E NCA in varying amounts. Most notable in desert areas and lower elevation pinyon-juniper and sagebrush.
Common burdock ( <i>Arctium minus</i> )	List C	Isolated across D-E NCA in wet areas and heavily disturbed sites.

Species	Category	Primary Occurrence
Halogeton ( <i>Halogeton glomeratus</i> )	List C	Abundant in desert areas east of the Gunnison River.
Hoary cress ( <i>Cardaria draba</i> )	List B*	Very rare along Divide Road and upper Gibbler area.
Redstem Filaree ( <i>Erodium cicutarium</i> )	List C	Found on heavily disturbed sites.
Russian knapweed ( <i>Centaurea repens</i> )	List B	Scattered small infestations in uplands. Abundant along Gunnison River.
Russian olive ( <i>Elaeagnus angustifolia</i> )	List B	Isolated along Gunnison River and lower Big Dominguez Creek.
Salt-cedar (Tamarisk) ( <i>Tamarix spp.</i> )	List B	Gunnison River heavily infested. Isolated in Big/Little Dominguez creeks. Found in numerous ephemeral drainages and livestock ponds. Rare above pinyon-juniper-mountain shrub ecotone.
Spotted knapweed ( <i>Centaurea maculosa</i> )	List B*	None found in D-E NCA but occurs in limited amounts on National Forest above D-E NCA.
Yellow toadflax ( <i>Linaria vulgaris</i> )	List B*	Occasional appearance along Gunnison River. Major infestation on National Forest above D-E NCA boundary.
Sulfur cinquefoil ( <i>Potentilla recta</i> )	List B*	None found in D-E NCA but larger infestations occur on the National Forest just above D-E NCA.
Oxeye daisy ( <i>Chrysanthemum leucanthemum</i> )	List B*	Found in Escalante and Dry Fork of Escalante
Jointed goatgrass ( <i>Aegilops cylindrica</i> )	List B*	None in D-E NCA but found along Hwy 50; easily moved through traffic and animals.
*Considered an "A" list weed by Grand Junction and UFO Weed Program on BLM lands		

The upland portion of D-E NCA, west of the river, is in good shape from a noxious and invasive weed perspective. Of these upland areas, the Wilderness is better yet. The uplands are similar to other upland areas of the northern Uncompahgre Plateau, where plant communities are healthy and competitive against noxious and invasive weed invasion.

The desert area east of the Gunnison River is similar to other desert regions of the field office, where there is a mix of healthy plant communities and those dominated by annual weed species.

The Gunnison River is similar to the Colorado and Dolores rivers, where substantial areas are dominated by tamarisk and Russian knapweed.

Vehicles are the primary vector for weed spread (from bicycles to motor vehicles). As a result, most weed infestations are located along roads, railroads and trails in the D-E NCA. Other vectors include livestock and livestock developments, wildlife, hikers, wind, heavy equipment, contaminated gravel, irrigation ditches, rivers and floods. All of the above have contributed to weeds in D-E NCA.

The type of treatments currently being applied depends on the weed and tools available, ranging from herbicides to hand and mechanical treatments and biological treatments. Creeping perennial species such as Russian knapweed and hoary cress respond best to a suite of herbicide treatment. Tamarisk is treated with a combination of methods-biological control with the tamarisk leaf beetle, manual cutting, and herbicide applications. Russian-olive is treated with a combination of manual cutting and an herbicide application. Another treatment method is to plant competitive species as part of a fire rehab project or a vegetation treatment.

### 3.2.2.5. Fire and Fuels

#### Fire Occurrence

Table 3.17 summarizes known fire occurrence within D-E NCA over the past 19 years for fires on BLM lands (also see Map 3–20). The majority of the fires in the D-E NCA are small (i.e., less than 10 acres), falling within the A and B size classes. Around 10 percent of the fires were larger than 10 acres (size classes C-G). The largest were grass fires, which occurred in the valley floor and were influenced by cheatgrass. Cheatgrass is a non-native, invasive grass that contributes to increased fire occurrence and severity. The vast majority of these fires were caused by lightning.

**Table 3.17. Fire Occurrence (Size and Acreage) 1980 to 2009**

Size Class	A	B	C	D	E	F	G
Size of Fire	0–.25	.26–9.9	10–99.9	100–299	300–999	1,000–4,999	5,000+
Number of Fires	84	23	6	–	–	–	–
Number of Acres	10	41	156	–	–	–	–
<i>Note: Data calculated for the D-E NCA on January 12, 2011, using WFMI (Wildland Fire Management Information) fire occurrence data. The majority of fires (80–95 percent) were suppressed.</i>							

#### Natural Fire Regime

To understand wildfire in the D-E NCA, it is necessary to ask a number of questions – the history of wildfire, vegetation conditions and how they might vary from reference conditions, the presence or absence of man-made structures and how controlled burns have been or might be used as vegetative treatments. Yet the sum of all those data gives only an approximate understanding of how wildfire might behave on any given day.

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention but including the influence of aboriginal burning. The five natural (historical) fire regimes are classified on the basis of average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant over-story vegetation. Satellite data are used for classifying lands within these fire regime groups (Map 3–21) and within the three fire regime condition classes (FRCCs) that are described below in Table 3.19.

Although satellite data are imperfect, it does show trends and is consistent across field offices. Professional judgment in interpreting this dataset suggests that these data are overestimating the number of acres in the Fire Regimes III and IV. The number of acres in Fire Regime V is probably a higher percentage than shown below in Table 3.18. This judgment is based on recent studies in the Gibbler area of the D-E NCA that suggest that the historical fire return interval in pinyon-juniper woodlands is near 200-300 years, and would therefore put much of the D-E NCA into fire regime Class V. This helps explain why occurrence of large fires in the D-E NCA is relatively infrequent.

**Table 3.18. Fire Regimes within the D-E NCA (Calculated Only on BLM Lands)**

Fire Regime Groups	Acres	Percent
I (0–35 year frequency and low to mixed severity-surface fires most common)	2,131	1 %
II (0–35 year frequency and high severity-stand replacement fires)	224	0.1%

<b>Fire Regime Groups</b>	<b>Acres</b>	<b>Percent</b>
III (35–200+ year frequency and mixed severity)	112,999	54 %
IV (35–200+ year frequency and high severity-stand replacement fires)	43,320	21 %
V (200+ year frequency and any severity-stand replacement fires)	42,762	20 %
Unclassified (water, barren, and alpine/tundra)	7,852	4 %
<i>Source: Information derived from LANDFIRE national data</i>		

## Fire Regime Condition Class

The FRCC System (Table 3.19 below) measures the extent to which vegetation departs from reference conditions (or how the current vegetation differs from a particular reference condition). Departures from reference condition could be a result of changes to key ecosystem components such as vegetation characteristics, fuel composition, fire frequency, fire severity and pattern, as well as other associated disturbances, such as insects and disease mortality. The classification system is used to categorize existing ecosystem conditions and to determine priority areas for treatment as mandated by national direction (see Map 3–22).



**Table 3.19. Fire Regime Condition Class Definitions and Acreages**

Condition Class		Fire Regime Example Management Options
<b>Fire Regime Condition Class 1</b>  Acres: 38,528 (19% of D-E NCA)		Fire regimes are within a historical range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within a historical range. Where appropriate, these areas can be maintained within the historical fire regime by treatments such as fire use.
<i><b>Vegetation Type</b></i>	<i><b>Percentage in FRCC 1</b></i>	
Desert shrub/saltbush	23%	
Mountain shrub	49.1%	
Pinyon-juniper woodlands	12%	
Ponderosa pine	19.7%	
Riparian	8.8%	
Sagebrush shrublands	38.3%	
<b>Fire Regime Condition Class 2</b>  Acres: 149,216 (71% of D-E NCA)		Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range. Where appropriate, these areas may need moderate levels of restoration treatments, such as fire use and hand or mechanical treatments, to be restored to the historical fire regime.
<i><b>Vegetation Type</b></i>	<i><b>Percentage in FRCC 2</b></i>	
Desert shrub/saltbush	59.5%	
Mountain shrub	47.9%	
Pinyon-juniper woodlands	79.6%	
Ponderosa pine	68.3%	
Riparian	46.1%	
Sagebrush shrublands	57.2%	
<b>Fire Regime Condition Class 3</b>  Acres: 15,454 (7% of D-E NCA)		Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range. Where appropriate, these areas may need high levels of restoration treatments, such as hand or mechanical treatments, before fire can be used to restore the historical fire regime. Non-native species like cheatgrass and tamarisk increase the amount of fuels in the landscape and thus reduce the fire return interval for the lands in which they are found.
<i><b>Vegetation Type</b></i>	<i><b>Percentage in FRCC 3</b></i>	
Desert shrub/saltbush	12.8%	
Mountain shrub	1.7%	
Pinyon-juniper woodlands	5.5%	
Ponderosa pine	9%	
Riparian	37%	
Sagebrush shrublands	3.9%	
<b>Unclassified</b>  Acres: 6,090 (3% of D-E NCA)		

Professional judgment suggests that the FRCC information above underestimates the amount of the D-E NCA that is in FRCC 1. Much of the pinyon-juniper woodlands in the D-E NCA, which is the area's most common vegetative community, are likely in FRCC 1. These woodlands often have naturally long fire return intervals (i.e., infrequent fires) that have not been significantly altered by humans. Sagebrush shrublands, ponderosa pine, and mountain shrub vegetative communities in the D-E NCA may currently be in FRCCs 2 and 3.

Fuel treatments have been used within the D-E NCA to reduce areas of hazardous fuel accumulations in the Gibbler Gulch area. Roller chopping was done in several areas to reduce large fire potential in mixed mountain brush (oak, serviceberry, mahogany) and pinyon-juniper woodland vegetative communities. Additional treatments in this area have been used to reduce future fire intensity in and around stands of ponderosa pine.

## Wildland-Urban Interface

The wildland-urban interface (WUI) is defined as those areas in which undeveloped wildlands meet or intermix with human development, ranging from communities and subdivisions to isolated structures and infrastructure (such as communication sites and power lines). These areas present a management challenge, not just from a fire perspective, but also with regard to wildlife habitat, travel management, recreation, watersheds, and exotic species. Continuing collaboration with the Colorado State Forest Service, county and community leaders, industry representatives, and homeowners associations is essential in order to address some of these issues, particularly regarding fuel management and fire suppression. Over the past eight years, numerous fuel management projects involving extensive acreage within the planning area have been designed and implemented in WUI areas (see Table 3.20). The Escalante and Unaweep Canyon corridors are the most prominent examples of a WUI on the borders of or within the D-E NCA.

**Table 3.20. Wildland-Urban Interface (Square Miles in the Year 2000)**

	<b>Delta County, CO</b>	<b>Mesa County, CO</b>	<b>Montrose County, CO</b>	<b>D-E NCA Region</b>	<b>All Western States</b>
Total WUI Area	22	72	40	134	23,640
WUI Area with Homes	2	2	1	5	3,290
WUI Area without Homes	20	70	39	129	20,350
<b>Percent of Total</b>					
WUI Area with Homes	8%	3%	3%	4%	14%
WUI Area without Homes	92%	97%	97%	96%	86%
<i>Source: See Headwaters Economics 2008. For an explanation of how these numbers are derived, visit <a href="http://headwaterseconomics.org/pubs/wildfire/metadata.php">http://headwaterseconomics.org/pubs/wildfire/metadata.php</a>.</i>					

### 3.2.2.6. Soils and Water Quality

Soils form the basis for the natural biological functions of the D-E NCA. Through their relationship with water and topography, soils dictate which vegetation is found throughout the D-E NCA. Soils can also be fragile resources. Resource uses can lead to soil degradation, which can have ripple effects on the other components of a natural system, with impacts to water quality, plants, and animals (both domesticated and wild), including fish.

## Soil Types

Three surveys conducted by the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) describe soil resources in the planning area: *Soil Survey of Paonia Area, Colorado* (including parts of Delta, Gunnison, and Montrose Counties—59,629 acres); *Soil Survey of Ridgway Area, Colorado* (including parts of Delta, Montrose, Gunnison and Ouray Counties—31,235 acres); and *Soil Survey of Mesa County, Colorado* (118,452 acres). These data were obtained online through the NRCS Web Soil Survey (WSS) website: <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.

Soil types in the D-E NCA planning area vary depending on climate, topography, and geology. The semiarid climate of the majority of the planning area is a primary influence on soil development. Low annual precipitation, hot summer temperatures, and high evaporation rates slow the chemical and biological processes needed for soil development and limit potential production of vegetation. Predominately shale and sandstone parent materials coupled with very active geological erosion also inhibit soil potential. In the higher elevations of the planning area, annual precipitation is upwards of 20 inches, and soil potential is more limited by depth to bedrock and the steepness of the topography than by climate. The vegetation cover in a large percentage of these areas is dominated by brushy species. After a fire, it is highly probable that these areas will experience significant erosion and deposition of sediment, with ash and other debris often clogging stream channels.

Deep soils with little rock content are typically found within the interior portion of mesa tops and alluvial valleys, whereas shallow rocky soils are found along mesa rims and the side slopes of canyons. Classified according to soil order, the soils commonly found within the planning area include the following:

- **Aridisols** (from dry climate regimes) and **Entisols** (with very limited soil development), found primarily in low-elevation, more arid portions of the planning area, and containing little organic matter throughout their vertical profile.
- **Alfisols** (with high levels of subsoil development) and **Mollisols** (with darkened, organic matter-enriched surfaces), are predominantly at higher elevations.

## Soil Characteristics

There are three key characteristics or factors related to D-E NCA soils: fragility, presence of crusts, and salinity. Many soils are termed “fragile” in that they have shallow depth to bedrock, minimal surface-layer organic material content and structure, soil textures that are more easily detached and eroded, or on slopes of over 35 percent where other surface features contribute to instability (Map 3–24). The soil map unit descriptions rate all soils in the resource area for their susceptibility to water erosion. Wind erosion may also be a hazard, particularly when surface litter and vegetation is removed by fire. According to NRCS soil survey data, soils on 9.5 percent of the Federal lands within D-E NCA, or [REDACTED] acres, meet the definition of “fragile” soils (Map 3–23), [REDACTED] fragile soil or high erosion hazard:

1. Soils rated as highly or severely erodible by wind or water, as described in NRCS soil survey reports.

2. Soils on **some** slopes over 35 percent, particularly if they have one of the following features:
  - a. Surface texture is characterized as sand, loamy sand, very fine sandy loam, fine sandy loam, silty clay, or clay.
  - b. Depth to bedrock is less than 20 inches.;
  - c. Erosion hazard rating is high or very high.
  - d. K-factor (soil erodibility potential) is more than 0.32.

In lower elevation areas with sparse plant cover, biological soil crust (BSC) provides another important soil cover component. BSC comprises a complex mosaic of green algae, lichens, mosses, cyanobacteria, and other bacteria (BLM 2001c), and it serves many beneficial functions to protect and enhance soil productivity, including acting as a stabilizer to inhibit erosion of surface soils. BSC is most prevalent in portions of the planning area that receive below 14 inches of annual precipitation and on terrain with less than 25 percent slope. In areas receiving higher than 14 inches of annual precipitation, competition from vascular plants reduces the occurrence of BSC, and on terrain with greater than 25 percent slope, erosional forces act to minimize the establishment of BSC. Soil texture and chemistry can also be factors in determining the density and composition of BSC communities. The BLM does not currently have thorough survey data for BSC soils.

Saline soils are those showing an accumulation of excessive salt. Salinity concentrations in surface soils vary according to site-specific topography, local climate, and the geologic member that weathered to produce the soil. Shale in steep badland areas generally shows higher surface salinity concentrations than valley fill or outwash, shale-derived soils. Within badland areas, southerly and westerly hill slope aspects have higher surface salinity levels than more northerly aspects. Salinity concentrations also tend to be higher in more arid portions of the planning area. Saline soils have been mapped on over approximately 977 BLM acres within the D-E NCA (Map 3–23).

Mancos Shale is the primary shale formation that characteristically weathers to produce fine-textured, silty clay loam soils. Additionally, the Mancos Shale is a marine-deposited evaporate; i.e., it is a sediment resulting from the evaporation of ancient water bodies. As a result, it often contains excessive levels of selenium (a non-metallic chemical element) and a variety of dissolvable salts, which can degrade water quality in receiving streams when mobilized by wind or water processes. Approximately 6,022 acres of Mancos Shale are situated within the planning unit boundary (number derived from USGS topographical map Moab Quad at a scale of 1:250,000).

The BLM used the NRCS WSS to determine runoff potential in the D-E NCA. WSS defines four hydrologic groups, which are based upon soil properties and qualities, and determined from field soil surveys. The NRCS WSS defines four hydrologic groups that are based on soil properties and qualities and derived from field soil surveys:

- Group A: soils that have a high infiltration rate when thoroughly wet, and a low runoff potential. These soils are generally deep, well-drained to excessively drained sands or gravelly sands. They also have higher transmissivities.
- Group B: soils that have a moderate infiltration rate when thoroughly wet, are moderately well drained, and have moderately fine to moderately coarse texture. They also have moderate transmissivities.

- Group C: soils that have a slow infiltration rate when thoroughly wet. They consist mainly of soils having a layer that impedes infiltration of water, or having moderately fine texture or fine texture. They typically have a slow rate of transmissivity.
- Group D: soils that have a very slow infiltration rate and tend to have high runoff potential when thoroughly wet. These soils consist of clays that have high shrink-swell potential, soils with a high water table, soils with a claypan or clay layer at or near the surface, and soils that tend to be shallow over nearly impervious material. They have slow transmissivities.

In the Escalante Creek and Dominguez Creek watersheds, blocks of land were chosen near the mouth, middle, and upper portions of the watersheds to determine the overall average group category for the entire D-E NCA. The lower, middle and upper portions of the Dominguez watershed were found to be predominately in the D group, primarily due to the rock outcrops and steepness. Approximately 60–80 percent of soils were found to be derived from rock outcrops, with the remainder being a mix of B and C groups.

The lower Escalante creek watershed fell mostly into the D group, with 80 percent of the area having steep rock outcrop soils. The middle Escalante Creek watershed fell into three groups, with 40 percent D soils, 14 percent C, and 46 percent B. The B group tended to be along stream channels, indicating deeper, better drained soils. C and D groups were generally located in the upland areas. The upper Escalante watershed soils were predominately in the B group, which have a moderate infiltration rate when thoroughly wet. Understanding these hydrologic soil groups may be helpful in planning restoration activities or vegetation manipulation.

## Soil Condition

Colorado has public land health standards that describe conditions needed to sustain public land health, and relate to all uses of the public lands. In 2007, the GJFO conducted land health assessments on the GJFO side of the D-E NCA (south of the Gunnison River, north of the USFS boundary; and east of East Creek). In 2010, the GJFO completed land health assessments north of the Gunnison River in the D-E NCA, and the UFO completed land health assessments for the Escalante area.

Colorado Public Health Standard 1 applies to upland soils that show infiltration and permeability rates appropriate to soil type, climate, land form, and geological processes. When soil infiltration and permeability are adequate, the soil can accumulate enough moisture for optimal plant growth and vigor and surface runoff is minimized (see Appendix D).

The BLM assessed soil resources in lands within the planning area and rated them as falling in one of three categories based upon Public Land Health Standard 1: 1) meeting the standard, 2) meeting the standard with problems, or 3) not meeting the standard. The soil rating for each LHA unit is shown in Table 3.21.

**Table 3.21. Findings on Public Land Health Standard 1**

Land Meeting Standard 1 (Acres)	Standard 1 with Problems (Acres)	Land Not Meeting Standard 1 (Acres)	Land Not Evaluated (Acres)
188,401 (87%)	9,226 (4%)	4,553 (2%)	15,708 (7%)

The D-E NCA as a whole has fair to good soil health. Soils in the assessed landscape tend to be highly erosive, making it difficult to determine their degree of departure from natural conditions (Map 3–6).

Current soil conditions are the result of a wide variety of activities that include historic mining, recreation, and climate-related events. Soil resources support range and forest plant communities that stabilize the soil surface and protect the watershed. The potential for maintaining or restoring these communities and conserving soil resources depends on soil types and how the resources are managed.

The BLM's land health assessments noted excessive erosion in some areas that were chained and reseeded with crested wheat in the 1960s for livestock range improvement. However, not all treatments showed excessive erosion, and some untreated areas seemed to be experiencing high levels of erosion. Loss of vegetation cover can result in reductions in soil health and substantial increases in soil erosion. At higher elevations, woody species may need treatment to allow more grasses and forbs to establish, reducing the potential for accelerated soil loss. In the Hunting Ground, the BLM found that erosion tended to be accompanied by invasive species (cheatgrass, annual wheatgrass, *Halogeton* infestations), a lack of perennial vegetation, and soil compaction. Increased visitation—including foot, horse, and motorized travel both on and off routes—may further affect soil health.

## State Water Quality Standards

Surface water on public lands is regulated by the Clean Water Act, Colorado River Salinity Control Act, Public Land Health Standards, Colorado Water Quality Standards, and other laws, regulations, and policy guidance at the Federal, State, and local levels. The BLM strives to manage for and sustain good water quality and adequate flows in area streams for the benefit of people, and riparian, aquatic, and terrestrial organisms, on a watershed scale.

Surface water quality varies greatly within the planning area depending on natural and anthropogenic factors, including geology, precipitation, vegetation cover, and land use. The bedrock geology within a watershed is a key determinant of its water quality. In areas with sandstone or granite bedrock, the surface water tends to be of good quality. Where marine shale of the Cretaceous age (predominantly Mancos Shale) are exposed, water quality tends to be poorer, with high total dissolved solids and/or selenium concentrations. Precipitation also influences water quality. Average precipitation within the planning area ranges from eight inches in the Hunting Ground to 18 inches or more in the higher elevations of the Uncompahgre Plateau. Most rainfall occurs in the form of isolated, brief, intense summer thunderstorms, creating localized floods that have the power to erode, mobilize, and transport contaminants downstream.

The headwater stream segments within the planning area flowing from the Uncompahgre Plateau to the Gunnison River generally support good water quality, meeting or exceeding water quality standards established by the State of Colorado. However, stream segments at lower elevations flowing from the Grand Mesa and through marine-derived shale deposits of the Cretaceous period (Mancos Shale) have water quality concerns, with the primary pollutants being salinity, sediment, selenium and sulfate (SO<sub>4</sub>). Salt (including sulfates) and selenium are naturally produced as runoff moves through surface and subsurface Mancos Shale prior to entering the stream. However, irrigated areas underlain by Mancos Shale are the principal sources of salt and selenium (Linard 2013). Salt and selenium are also associated with sediment, as ions tend to be bound to soil particles. While erosion rates are naturally high in many areas, erosion tends to be accelerated

by surface disturbance. The extent of the Mancos Shale is limited to isolated outcrops and exposures along cliff bands adjacent to and south of the Gunnison River. In this area, most of the Mancos Shale formation has eroded away from the landscape, exposing older sandstone deposits (primarily Dakota Sandstone). Mancos Shale deposits north of the Gunnison River within the planning area are also limited but become more extensive to the north where the Mancos Shale is at or near the ground surface. These areas, although not within the planning area boundary, are part of the contributing watersheds flowing from the flanks of the Grand Mesa to the Gunnison River. Other sources of water quality contaminants are tied to pollution associated with upstream runoff from urban, suburban, or rural areas; and malfunctioning septic systems and waste from recreationists, pets, livestock, and birds. Specifically, *Escherichia coli* contamination is of particular concern in the Gunnison River where waters are suitable or intended to become suitable for recreational activities where the ingestion of small quantities of water is likely to occur.

Colorado's water quality standards and regulations are codified in Regulation No. 31 of Title 5 CCR 1002-31 (Basic Standards and Methodologies for Surface Water). Colorado's regulations set forth provisions regarding the adoption of water quality-based designations for certain surface waters and establish an antidegradation review process applicable to certain activities affecting the quality of surface waters (CDPHE 2013b). Regulation No. 35 of Title 5 CCR 1002-35 for the Gunnison and Lower Dolores River Basins defines the State-identified water quality standards for the planning area (CDPHE 2013c). Colorado does not have criteria to protect the stream flow necessary to support existing uses.

All surface waters within Colorado are organized by basin and labeled by water body identification (WBID) stream segment. For each stream segment, the State has set water quality standards for physical, chemical, and biological parameters that are based on the existing or potential beneficial uses for water supply, aquatic life, recreation, and agriculture. Colorado's list of water quality-limited segments requiring total maximum daily loads (TMDL) fulfills Section 303(d) of the Clean Water Act, which requires that states submit to the U.S. Environmental Protection Agency (EPA) a list of those waters for which technology-based effluent limitations and other required controls are not stringent enough to implement water quality standards. For these impaired water bodies, TMDL calculations would have to be completed to determine the loadings from anthropogenic and natural sources and to determine the loading allocations for the different polluting sources (CDPHE 2012b).

Colorado's Monitoring and Evaluation (M&E) List identifies water bodies where there is reason to suspect water quality problems but where there is also uncertainty regarding one or more factors, such as the representative nature of the data. When water bodies are impaired but it is unclear whether the cause of impairment is attributable to pollutants as opposed to pollution, they are also placed on the M&E List (CDPHE 2012b). Sediment, selenium, *E. coli*, and sulfate ( $\text{SO}_4$ ) are currently the primary water quality contaminants of concern within the planning area (see Table 3.24).

Affected WBID segments within the Lower Gunnison River Basin include COGULG02, COGULG04a, COGULG04b, COGULG05, and COGULG06. At the time of this plan, designations based on water quality apply only to WBID segment COGULG04a as shown in Table 3.22. No other WBID segments satisfied criteria outlined in CDPHE Regulation 31 for Outstanding Waters (OW) or Use Protected (UP) designation. These undesignated WBIDs are subject to the special protection under the antidegradation review provisions set forth in section 31.8(3) of the CDPHE Regulation No. 31. However, UP-designated waters do not warrant the special protection provided by the outstanding waters designation or the antidegradation review

process (CDPHE 2013b). None of the WBIDs in the planning area have OW designation. A description of the planning area's hydrology including typical flow regimes associated with planning area surface waters is given in the "Aquatic Systems" portion of Chapter 3.

For all WBID segments, a full suite of water quality standards have been developed by the Colorado Water Quality Control Commission to protect the designated uses of streams in the State. Table 3.22 below outlines stream designations, stream classifications and water quality standards for the Lower Gunnison River Basin WBIDs within the planning area.



**Table 3.22. WBID Stream Designations, Classifications and Numeric Standards from CDPHE Regulation No. 35**

WBID	Des-ignation	Classifications	Numeric Standards						Temporary Modifications and Qualifiers
			Physical and Biological	Inorganic (mg/L)		Metals (µg/l)			
COGULG02		Aq Life Warm 1	T=TVS(WS-II) oC	NH <sub>3</sub> (ac/ch)=TVS	S=0.002	As(ac)=340	Fe(ch)=WS(d-is)	Hg(ch)=0.01(Tot)	Temporary Modification:
		Recreation E	D.O.=5.0 mg/L	Cl <sub>2</sub> (ac)=0.019	B=0.75	As(ch)=0.02(Trec)	Fe(ch)=1000(Trec)	Mo(ch)=160(Trec)	Type A
		Water Supply	pH=6.5-9.0	Cl <sub>2</sub> (ch)=0.011	NO <sub>2</sub> =0.05	Cd(ac)=TVS-(tr)	Pb(ac/ch)=TVS	Ni(ac/ch)=TVS	Se(ch)=current conditions
		Agriculture	E. coli=126/100ml	CN=.005	NO <sub>3</sub> =10	Cd(ch)=TVS	Mn(ac/ch)=TVS	Se(ac/ch)=TVS	Expiration date of Dec. 31, 2017
					Cl=250	CrIII(ac)=50(Trec)	Mn(ch)=WS-(dis)	Ag(ac)=TVS	Temporary modification:
					SO <sub>4</sub> =480	CrIII(ch)=TVS		Ag(ch)=TVS-(tr)	As(ch)=hybrid
						CrVI(ac/ch)=TVS		Zn(ac/ch)=TVS	Expiration date of 12/31/21.
						Cu(ac/ch)=TVS			
COGULG04a	UP	Aq Life Warm 2	T=TVS(WS-II) oC	NH <sub>3</sub> (ac/ch)=TVS	S=0.002	As(ac)=340	Fe(ch)=WS(d-is)	Ni(ac/ch)=TVS	
		Recreation P	D.O.=5.0 mg/L	Cl <sub>2</sub> (ac)=0.019	B=0.75	As(ch)=0.02-10(Trec)1	Fe(ch)=1000(Trec)	Se(ac/ch)=TVS	
		Water Supply	pH=6.5-9.0	Cl <sub>2</sub> (ch)=0.011	NO <sub>2</sub> =0.5	Cd(ac/ch)=TVS	Pb(ac/ch)=TVS	Ag(ac)=TVS	
		Agriculture	E. coli=205/100ml	CN=.005	NO <sub>3</sub> =10	CrIII(ac)=50(Trec)	Mn(ch)=WS-(dis)	Ag(ch)=TVS	
					Cl=250	CrIII(ch)=TVS		Zn(ac/ch)=TVS	
					SO <sub>4</sub> =WS	CrVI(ac/ch)=TVS			
							Mn(ac/ch)=TVS		
							Hg(ch)=0.01(Tot)		

WBID	Des-ignation	Classifications	Numeric Standards						Temporary Modifications and Qualifiers
			Physical and Biological	Inorganic (mg/L)		Metals (ug/l)			
						Cu(ac/ch)=TVS	Mo(ch)=160(Trec)		
COGULG04b		Aq Life Warm 2 Recreation E Water Supply Agriculture	T=TVS(WS-II) oC D.O.=5.0 mg/L pH=6.5-9.0 E. coli=126/100ml	NH3(ac/ch)=TVS Cl2(ac)=0.019 Cl2(ch)=0.011 CN=.005	S=0.002 B=0.75 NO2=0.5 NO3=10 Cl=250 SO4=WS	As(ac)=340 As(ch)=0.02-10(Trec)1 Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS-(dis) Mn(ac/ch)=TVS Hg(ch)=0.01(Tot) Mo(ch)=160(Trec)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS Zn(ac/ch)=TVS	
COGULG05		Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS(CS-II) oC D.O.=6.0 mg/L D.O.(sp)=7.0 mg/L pH=6.5-9.0 E. coli=126/100ml	NH3(ac/ch)=TVS Cl2(ac)=0.019 Cl2(ch)=0.011 CN=.005	S=0.002 B=0.75 NO2=0.05 NO3=10 Cl=250 SO4=WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS-(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrIII(ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS-(dis)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS-(tr) U(ac)=TVS U(ch)=16.8-301(Trec)	

WBID	Des-ignation	Classifications	Numeric Standards						Temporary Modifications and Qualifiers
			Physical and Biological	Inorganic (mg/L)		Metals (µg/l)			
						CrVI(ac/ch)=TVS  Cu(ac/ch)=TVS	Hg(ch)=0.01(Tot)  Mo(ch)=160(Trec)	Zn(ac/ch)=TVS	
COGULG06		Aq Life Cold 1  Recreation E  Agriculture	T=TVS(CS-II) oC  D.O.=6.0 mg/L  D.O.(sp)=7.0 mg/L  pH=6.5-9.0  E. coli=126/100ml	NH3(ac/ch)=TVS  Cl2(ac)=0.019  Cl2(ch)=0.011  CN=.005	S=0.002  B=0.75  NO2=0.05  NO3=100	As(ac)=340  As(ch)=7.6(T-rec)  Cd(ac)=TVS-(tr)  Cd(ch)=TVS  CrIII(ac/ch)=TVS  CrIII(ch)=100(Trec)  CrVI(ac/ch)=TVS	Cu(ac/ch)=TVS  Fe(ch)=1000(Trec)  Pb(ac/ch)=TVS  Mn(ac/ch)=TVS  Hg(ch)=0.01(Tot)  Mo(ch)=160(Trec)	Ni(ac/ch)=TVS  Se(ac/ch)=TVS  Ag(ac)=TVS  Ag(ch)=TVS-(tr)  U(ac) =TVS  U(ch)=16.8-301(Trec)  Zn(ac/ch)=TVS	
Source: CDPHE 2013c									

Waters are classified by the State according to the uses for which they are presently suitable or intended to become suitable (CDPHE 2013b). The classifications for stream resource use are defined as follows:

- *Aquatic Life Cold 1*: Waters currently or potentially capable of sustaining a wide variety of cold water biota, including sensitive species.
- *Aquatic Life Warm 1*: Waters currently or potentially capable of sustaining a wide variety of warm water biota, including sensitive species.
- *Aquatic Life Warm 2*: Waters not capable of sustaining a wide variety of warm water biota—including sensitive species—due to physical habitat, water flows or levels, or uncorrectable water quality conditions that result in substantial impairment of the abundance and diversity of species.
- *Recreation E*: “Existing primary contact” designation for waters in which primary contact uses have been documented or are presumed to be present. This is the default designation if no other information is available. These surface waters are suitable or intended to become suitable for recreational activities in or on the water when the ingestion of small quantities of water is likely to occur. Such waters include but are not limited to those used for swimming, rafting, kayaking and water skiing.
- *Recreation N*: Waters not suitable or intended to become suitable for primary contact recreation uses. This classification shall be applied only where a use attainability analysis demonstrates that there is not a reasonable likelihood that primary contact uses will occur in the water segment(s) in question in the next 20-year period.
- *Water Supply*: Waters that are or could become suitable for potable water supplies.
- *Agriculture*: Waters that are or could become suitable for crop irrigation and livestock watering.

The BLM reviewed the CDPHE Integrated Water Quality Monitoring and Assessment Report—the 2012 update to the 2010 305(b) report—to determine the current status of assessment and determination of water quality within the planning area. In Colorado, the majority of the assessed surface water bodies fall into IR Categories 1, 2, and 3. In some cases, a complete assessment of all uses cannot be completed, because the BLM lacks the data, but the data that are available indicate that water quality is fully supporting at least some of the uses that were assessed. An example would be where an aquatic life assessment was completed, but analytical results to assess water supply uses are not available. These segments would fall into Category 2. Colorado places segments that lack topical and conclusive evidence regarding attainment of standards on the M&E list, and they could fall into Category 2 if other uses are assessed or into Category 3 if no other uses are assessed. Also included in IR Category 3 are those water bodies that were not assessed or for which no data exist during the current 305(b) assessment cycle. Segments for which an EPA-approved TMDL has been completed are placed in IR Category 4a. In some cases, segments that were previously classified as IR Category 4a have been reassessed and placed in Category 1, as they have attained all classified uses. Regulation No. 93, Colorado’s Section 303(d) list of impaired waters, tabulates all those segments that require a TMDL and tabulates all those water bodies that are classified as IR Category 5 (CDPHE 2012a). This fulfills the requirements of Section 303(d) of the Federal Clean Water Act, which requires that states submit to the U.S. EPA a list of those waters for which technology-based effluent limitations and other required controls are not stringent enough to implement water quality standards. If some impairment is suspected but data are inconclusive or inadequate, the segment is placed on the

M&E list (CDPHE 2012a). Table 3.23 summarizes the status of assessment and determination of water quality within the planning area by WBID. Table data are from CDPHE 2012a.

**Table 3.23. Status of Assessment and Determination of Water Quality within the D-E NCA by WBID**

ID 305(B)	305(B) Assessment Unit Name	Designated Uses	Causes	Sources	IR Category
COGULG02_7100	Gunnison River-Uncompaghre to Colorado	NS-AQ Life Cold 1, FS-Agriculture, FS-Water Supply, NS-Primary Contact Recreation	Selenium, E.coli	Agriculture	5
COGULG04a_7100	Gunnison River tributaries	FS-Secondary Contact Recreation, NS-Water Supply, NS-Agriculture, NS-AQ Life Warm 2	Selenium	Agriculture	4a
COGULG04a_7130	Wells Gulch	FS-Secondary Contact Recreation, FS-Water Supply, NS-Agriculture, NS-AQ Life Warm 2, FS-Agriculture	Selenium	Unknown	4a
COGULG04a_7140	Whitewater Creek	FS-Secondary Contact Recreation, NS-Water Supply, NS-Agriculture, NS-AQ Life Warm 2, FS-Agriculture	Selenium, Manganese, Sulfates	Unknown	5
COGULG05_7100	Roubideau, Monitor, and North Fork Escalante Creeks	FS-AQ Life Cold 1, FS-Agriculture, FS-Water Supply, FS-Primary Contact Recreation	Unknown	Unknown	1
COGULG06_7100	Roubideau, Escalante, Little Dominguez, Big Dominguez	FS-AQ Life Cold 1, FS-Agriculture, FS-Water Supply, FS-Primary Contact Recreation	Unknown	Unknown	1

Table 3.24 outlines specific portions of affected WBID reaches within the planning area identified in CDPHE Regulation No. 93 Colorado's section 303(D) List of Impaired Waters and M&E List (Map 3–25). Table data are from CDPHE 2012b.

**Table 3.24. WBID Segments within the Planning Area Identified in CDPHE Regulation No. 93**

WBID	Segment Description	Portion	Colorado's Monitoring and Evaluation Parameter(s)	Clean Water Act Section 303(d) Impairment	303(d) Priority
COGULG02	Gunnison River, Uncompahgre River to Colorado River	All	Sediment	<i>E. coli</i>	H
COGULG04a	Tributaries to Gunnison River, Crystal Reservoir to Colorado River	Wells Gulch	pH		
COGULG04b	All lakes and reservoirs tributary to the Gunnison River and not on national forest lands from the outlet of Crystal Reservoir to the Colorado River	Kannah Creek	SO <sub>4</sub>		

The BLM uses findings of the Colorado Water Quality Control Commission as the basis for Colorado Public Land Health Standard 5, Water Quality. In other words, segments found to meet State water quality standards are also found to meet Colorado Public Land Health Standard 5. However, although water quality in affected stream segments within the planning area may be meeting water quality standards on the watershed or segment scale, local deviations may occur that could result in water quality impairments on the local scale. Standards for water quality are based on the classification or designated use of particular streams (CDPHE 2013c).

## BLM and USGS Water Quality Data

The BLM and the U.S. Geological Survey also collect water quality data. These data are more site specific than the State's data, which generalize across the classes of tributaries described above. Biannual water quality data were collected by the BLM from 1982 to 1994, and annually from 2009 to 2010 in Lower Dominguez; and from 1993 to 1995, 2007, and annually from 2009 to 2010 in Upper Big Dominguez. Varying degrees of water quality analysis were also periodically conducted on portions of Escalante Creek from 1977 to 2009. Water quality and stream-flow data are available upon request at the BLM's Grand Junction Field Office or Uncompahgre Field Office. The USGS operates a real-time stream gage and water quality station on the Gunnison River near Grand Junction, CO (No. 09152500). Data from this gage can be accessed online at the following website: <http://waterdata.usgs.gov/nwis/uv?09152500>.

BLM data indicate Little and Big Dominguez Creeks have excellent water quality. Total dissolved solids are generally below 250 mg/L, and the waters are a calcium bicarbonate type. Water quality in Escalante Creek is typically good, with TDS values ranging from 250 mg/L in the North Fork to 480 mg/L at the mouth. Some elevated levels of *E. coli* have been reported that are due to both livestock and recreational use at the Potholes; however, no exceedances have been measured since the year 2000, and the State has not identified Escalante Creek as being impaired as a result of *E. coli*. These streams tend to naturally convey large sediment loads from storm flows. The 303(d)

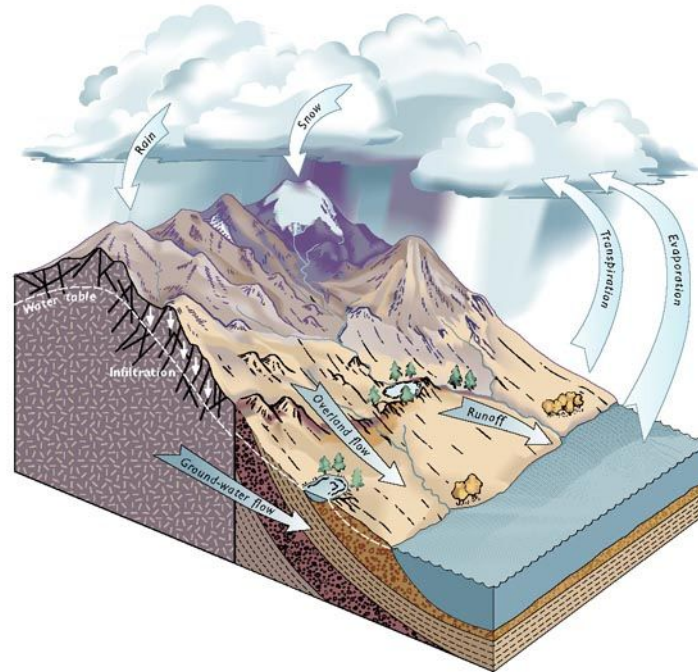
and M&E lists do not include these streams, which are in Stream Segments 5 and 6, suggesting all use types are supported and water quality standards are being met.

## Groundwater Resources

The planning area is situated within the Dakota-Glen Canyon aquifer system and Gunnison River alluvial aquifer system located in the lower Gunnison River Basin and structurally situated within the Uncompahgre Uplift west of the Gunnison River (USGS 1995). The Uncompahgre Uplift is an asymmetrical anticline plunging northwest and southeast. The average dip for the Uncompahgre anticline slope is 2.5 degrees northeast, ranging from 2 degrees to 4 degrees. Nearly parallel drainage from the Uncompahgre Plateau trends northeast and reflects the anticlinal dip and other displacement, such as large-scale joints and minor faults (Brooks and Ackerman 1985). A more comprehensive background of the geology of the planning area can be found in “Geological and Paleontological Resources” in Chapter 3. Aquifers occur in both bedrock formations and unconsolidated quaternary sands and gravels in the planning area.

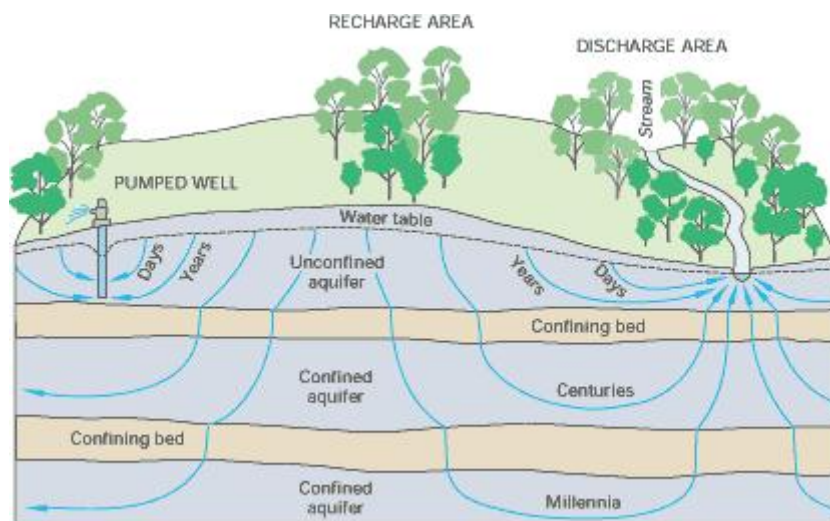
An aquifer is a groundwater reservoir composed of geologic units that are saturated with water and sufficiently permeable to yield water in a usable quantity to wells and springs. Aquifers provide two important functions: 1) They transmit groundwater from areas of recharge to areas of discharge, and 2) they provide a storage medium for useable quantities of groundwater. The amount of water a material can hold depends upon its porosity. The size and degree of interconnection of those openings (permeability) determine the materials’ ability to transmit fluid. Aquifers that are not completely saturated with water are termed unconfined aquifers. The upper portion of the aquifer, where the pore spaces are only partially filled, is referred to as the unsaturated zone. Confined or artesian aquifers are completely saturated, permeable geologic units overlain by low permeability confining layers that prevent the free movement of air and water between the layers. The water is thus confined under pressure and if tapped by a well, rises to a level above the top of the aquifer but not necessarily above the land surface. A perched aquifer is a limited unconfined aquifer with an underlying confining layer that lies above and is separated from the regional water table by an unsaturated zone (Topper et al. 2003).

The ultimate source of groundwater is precipitation (in the form of rain, snow, or hail). The precipitation that does not evaporate or immediately flow to rivers, streams or lakes percolates into the ground, where some of it eventually reaches the water table. The concept of the hydrologic cycle is central to understanding the occurrence of groundwater. The hydrologic cycle, as the name implies, is the endless, dynamic process of the circulation of water between the atmosphere, the oceans, and the land. The basic components of the hydrologic cycle are shown schematically in Figure 3.4 (Topper et al. 2003). The integrated nature of the hydrologic cycle makes groundwater vulnerable to pollution sources in the atmosphere, on or within land surfaces, or in surface waters (Topper et al. 2003).



**Figure 3.4. General Illustration of the Hydrologic Cycle**

Movement of water in the atmosphere and on the land surface is relatively easy to visualize, but the movement of groundwater is not. Figure 3.5 (Winter, Harvey, Franke, and Alley 1998) generalizes the movement of groundwater along flow paths of varying lengths in transmitting water from areas of recharge to areas of discharge. In the uppermost, unconfined aquifer, flow paths near the stream can be tens to hundreds of feet in length and have corresponding travel times of days to a few years. The longest and deepest flow paths of confined aquifers may be thousands of feet to tens of miles in length, and travel times may range from decades to millennia. In general, shallow groundwater is more susceptible to contamination from human sources and activities because of its close proximity to the land surface (Winter, Harvey, Franke, and Alley 1998).



**Figure 3.5. Generalized Movement of Groundwater Along Flow Paths of Varying Lengths**



*Alluvial Aquifers in D-E NCA:* Alluvial groundwater in the planning area is associated with unconfined alluvial deposits of the Gunnison River and its tributary drainages. In the planning area, alluvial aquifers are predominantly recharged by rainfall and snowmelt runoff at higher elevations, although water quality studies by the U.S. Geological Survey indicate some recharge does occur from bedrock sources. Alluvial groundwater, although relatively insignificant in terms of total volume withdrawn (compared to total surface water withdrawals), is important for irrigation, public and domestic water supply, and livestock uses within the Gunnison River basin (Topper et al. 2003). On public lands in the planning area, the primary uses are for wildlife and stock watering purposes, although one groundwater well is identified for domestic use (see Table 3.25). The alluvium of the Gunnison River basin consists of clay, silt, sand, gravel, and cobbles. Alluvial thickness in the Lower Gunnison River basin is rarely greater than 200 feet, generally less than 100 feet below ground surface and very thin or nonexistent in the canyon areas of the main stem of the Gunnison River and tributaries (Topper et al. 2003).

A review of Colorado's Decision Support Systems (CDSS) website indicates 13 permitted groundwater wells within the planning area, of which seven are reported to be constructed and only one was located on public land. General information pertaining to well ownership, depth, static water levels, and geomorphic setting are presented in Table 3.25.

**Table 3.25. Wells Constructed within the Planning Area**

Well Permit No.	Land Status	Geomorphic Setting	Use Type	Well Depth (ft bgs)	Static Water Level (ft bgs)	Pumping Rate (gpm)
31566	Public	Alluvial valley	Domestic	22	5	60
95979	Private	Alluvial valley	Domestic	Information not available		
152165	Private	Alluvial valley	Domestic			
152166	Private	Alluvial valley	Domestic	104	25	5
152639	Private	Alluvial valley	Domestic	Information not available		
226752	Private	Alluvial valley	Domestic			
263149	Private	Alluvial valley	Domestic, stock	115	6	Null

Unconsolidated and unconfined alluvial deposits found in stream valleys contain the best producing aquifers within the planning area, and these waters are valued for most uses on private lands (Brooks and Ackerman 1985). Springs originating from alluvial or colluvial deposits are common at higher elevations; all wells constructed in the planning area are located in alluvial valley bottoms and are completed in unconsolidated alluvial deposits (CDSS 2014).

Water quality in the Gunnison River alluvial aquifer system is typically very good with most total dissolved solids (TDS) values below the secondary drinking water standard of 500 mg/L (Topper et al. 2003). Wells completed in alluvial deposits have been reported to produce from 1 to 750 gpm averaging 39 gpm and typically yielded calcium sulfate bicarbonate type water (Brooks and Ackerman 1985; Topper et al. 2003). Salinity, water chemistry, and relative position of bedrock and alluvial aquifers indicate that some alluvial aquifers receive discharge from bedrock aquifers. Groundwater discharging from springs generally is less saline than well water, especially for those springs with shorter flow systems. Most spring waters are a calcium sulfate bicarbonate type, but some are of a calcium magnesium bicarbonate sulfate type (Brooks and Ackerman 1985).

The Colorado Water Quality Control Commission promulgates regulation No. 41 entitled "The Basic Standards for Groundwater" under the authority to classify waters of the State and to establish water quality standards to support those classifications. The regulation establishes a system for classifying groundwater and describing those classifications by use and quality. The

standards, when applied to specific classes of groundwater, become the baseline by which one can establish whether water quality has been degraded or water use has been impaired or precluded. Regulation 41 outlines both numerical and narrative standards for water quality associated with different classifications. Water developments for livestock operations (typical on public lands within the planning area) fall under the “Agricultural Uses” definition, which includes existing or potential future uses of groundwater for the cultivation of soil, the production of crops, and/or the raising of livestock. Water developments for “Domestic Uses” are those existing or potential future uses of groundwater for household or family use, including—but not limited to—drinking, gardening, municipal, and/or farmstead uses (CDPHE 2013a).

*Bedrock Aquifers in D-E NCA:* The principal bedrock aquifer system in the planning area is the Dakota-Glen Canyon aquifer, which comprises four permeable zones referred to as the Dakota aquifer (Dakota Sandstone), Morrison aquifer (sandstone portions of the Morrison Formation), Entrada aquifer (associated with the Entrada Sandstone), and Glen Canyon aquifer (associated with the Kayenta and Wingate Sandstone). Recharge occurs at higher elevations on top of the Uncompahgre Plateau, and groundwater flows towards discharge areas as dictated by hydraulic gradients and hydraulic properties of geologic formations. Typically, in this area groundwater flows downdip (northeast) through permeable sandstone layers or fractures, eventually discharging from contact zones along cliff bands or directly to alluvial/colluvial deposits, as is evident by the occurrence of numerous springs and seeps discharging from the contact zone between the Wingate and Chinle formations (USGS 1995).

Bedrock aquifers in the planning areas are generally sandstone and fractured bedrock such as sandstone, shale, and siltstone. However, Precambrian basement rocks (metamorphic) may also serve locally as a viable bedrock aquifer. Fine-grained rocks require significant fractures to transmit and store groundwater. The extent of fractures in many of the rocks is unknown, and aquifer characteristic data are limited. The Wingate Sandstone (Upper Triassic) was developed for water supply in the lower Gunnison Basin, but no wells within the planning area have been completed in the formation. Bedrock units that yield the most water to wells are the Mesaverde Formation and the Mancos Shale (Upper Cretaceous); as well as the Burrow Canyon Formation and the Dakota Sandstone (Lower Cretaceous). The only outcroppings of the Mesaverde Formation in the planning area occur in the Hunting Ground, east of the Gunnison River. No groundwater wells in the planning area have been completed in the Mesaverde formation, Burrow Canyon Formation, or Dakota Sandstone. Figure 3.1 shows surface geologic units within the planning area.

Well-production data show that the Burrow Canyon Formation and the Dakota Sandstone represent the best opportunity for development in the western part of the lower Gunnison River basin, with reported well yields ranging from 5 to 14 gpm. However, as stated previously, no groundwater wells in the planning area have been completed in these formations, so local aquifer characteristic data are unknown. Similarly, the Wingate and Entrada Sandstones have produced 11–15 gpm in the lower Gunnison River basin, but the extent of these formations on the landscape is limited, and no wells within the planning area have been completed in the formations (Brooks and Ackerman 1985; CDSS 2014). Additionally, erosional features (deep canyons) characteristic of the landscape effectively dissect recharge areas, limiting storage capacity in these bedrock aquifers.

Fractured metamorphic rocks of Precambrian age found below consolidated sedimentary rocks at most locations in the Lower Gunnison basin may be locally viable aquifers within portions of the planning area. However, if a well is to be developed in the metamorphic rocks, the yield

will depend on the number of fractures intersected below the water level and the well. Yield generally decreases with greater depth, because most fractures are in the upper part of these rocks (Brooks and Ackerman 1985). No groundwater wells completed in Precambrian rocks exist in the planning area.

### 3.2.2.7. Climate and Climate Change

The planning area is located in a high plateau continental region of mesas and high desert. The climate has been characterized by dry, sunny days and clear nights with extreme daily temperature changes, and low precipitation. Throughout much of the planning area, average daily winter temperatures range from a low of around 10 °F to a high of nearly 40 °F. During summer, average daily temperatures range from around 50 °F up to 90 °F. Monthly precipitation is relatively uniform, with minimum precipitation typically occurring during June, followed by a period of maximum precipitation caused by summer convective thunderstorms. Higher-elevation monthly precipitation is more uniform but contains less moisture in mid-winter snow. Snowfall typically occurs from November through April (October through May at higher elevations), with light accumulation. In general, total accumulated precipitation throughout the planning area was low in 2000, 2002, and 2003, which were among the 10 driest years on record, with 2006 and 2007 among the 10 wettest years on record.

A 2007 EPA report indicates that increased atmospheric concentrations of greenhouse gases and land use changes are contributing to an increase in average global temperature or global warming (EPA 2007). This warming is associated with climatic variability, commonly known as climate change, and exceeds the historic norm. Temperature changes and climatic variability are not evenly distributed across the globe. Models and observations indicate that average temperature increases in northern latitudes are greater than in other areas, and seasonal low temperatures are generally increasing faster than high temperatures.

According to the CWCB, temperatures in Colorado increased by approximately 2 °F between 1977 and 2006 (Ray et al. 2008). As reported in the 2007 Colorado Climate Action Plan developed by the State of Colorado (Ritter 2007), climate change effects within Colorado have included the following:

- Shorter and warmer winters, with a thinner snow pack and earlier spring runoff
- Less precipitation overall, with more precipitation falling as rain
- Longer periods of drought
- More and larger wildfires
- Widespread beetle infestations
- Rapid spread of West Nile virus due to higher summer temperatures

While there is variability in predicted temperature changes in coming decades, recent models suggest temperature increases in the range of 2.5 °F over the next 2 decades (Ray et al. 2008). The Colorado Plateau Rapid Ecoregional Assessment (CPREA; Bryce, Strittholt, Ward, and Bachelet 2012) predicts increases in average summer temperatures, and even greater increases for the winter months. Predicted precipitation changes have been more variable, but the CPREA predicts general precipitation declines from past conditions across the Colorado Plateau in the

2015–2030 time period, with severe drought likely to occur in some areas. As a result of these climatic changes, the CPREA predicts considerable change in vegetation will occur between past conditions and 2045–2060 time-frame. The CWCB (Ray et al. 2008) has predicted climate change impacts on Colorado to include the following:

- More frequent and longer lasting heat extremes that stress electrical utility demands
- Longer and more intense wildfire seasons
- Midwinter thawing and earlier melting of snow pack
- Lower river flows in summer months
- Water shortages for irrigated agriculture
- Slower recharge of groundwater aquifers
- More insect infestation in forests
- Migration of plant and animal species to higher elevations

### 3.2.3. Cultural Resources

When D-E NCA was designated on March 30, 2009, the cultural, historical and archeological resources of the area were specifically listed as purposes for the area’s designation as an NCA. Cultural resources are an integral part of our nation’s heritage, and represent a fundamental part of our local history in western Colorado. By teaching the stories of the past, these resources help explain the development of communities as they exist today.

Cultural resources are fragile and irreplaceable. They are subject not only to natural forces of change like erosion, wildfire, and decay, but also to the effect of increasing and varied demands placed on them. Such demands include public educational and recreation purposes or scientific and experimental uses, as well as unique traditional, cultural or religious uses. Cultural resources can also be destroyed or removed illegally. Such activities remove a portion of our history and decrease the information about our past that can be passed on to future generations.

Cultural resources are concrete, material places and things. As defined by the BLM (BLM 2004b), the term “cultural resource” can refer to archaeological and architectural sites, structures, or places with important public and scientific uses. Cultural resources may also include definite locations (i.e., sites or places) of traditional cultural or religious importance to specified social and/or cultural groups (see “Traditional cultural property” in Glossary). The term *archaeological resources* refers to any material remains of human life or activities that are at least 100 years of age (and may be of archaeological interest, as further defined at 43 CFR 7.3.). The BLM has a policy of managing historical properties as defined in 36 CFR 800.16.

The D-E NCA has been occupied, with varying intensity, for almost 10,000 years. Cultural resources include prehistoric and historic archaeological and architectural resources, as well as Native American traditional cultural and religious properties. Prehistoric properties include stone tool (lithic) and chip scatters, quarries, temporary camps for seasonal hunting and gathering, extended camps, wickiup villages, hunting/kill/butchering sites, game processing areas, tree scaffolds, eagle traps, vision quest sites, rock shelters and caves, rock art panels, trails, and isolated finds. Historic properties (after 1860) include homesteads, trails and roads, railroads,

irrigation ditches, reservoirs, mining sites, corrals, line camps, cabins, trash scatters and dumps, aspen art carvings (arborglyphs), and isolated finds.

## Identification of Cultural Resources

Section 106 of the NHPA requires the continued identification of cultural resources. Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identifying, protecting, and utilizing for public benefit. Cultural resources are identified through field inventories (i.e., surveys), historical documentation, or oral evidence. Most cultural resource inventories done by the BLM are done in areas of proposed ground disturbance, in support of other BLM resources and resource uses. These inventories take into account direct, indirect, and cumulative effects of the proposed projects on cultural resources. Cultural sites discovered during inventory are evaluated for eligibility to be listed on the NRHP and protected through site avoidance where possible.

Since 1976, Class II (statistical based sample) and III (systematic intensive) cultural resource inventories for both research and compliance for ground-disturbing projects have been completed on public and private lands within the D-E NCA planning area. During these surveys, cultural sites have been recorded and evaluated in the field for eligibility to be listed on the NRHP. As projects are authorized, consultation with SHPO makes those NRHP determinations official. Surveys conducted in the D-E NCA for land exchanges, rights-of-way, recreational developments, grazing projects, and research has resulted in an ever-increasing database of inventory reports and cultural resource records.

## Cultural Overview Data

In addition to site-level inventorying, broad overviews of area-wide cultural resources are called Class I inventories. The most recent Class I inventory of the cultural resources on the Grand Junction Field Office side of the D-E NCA is the *Class I Cultural Resource Overview of the Bureau of Land Management's Dominguez-Escalante National Conservation Area, Western Colorado* overview completed by Alpine Archaeological Consultants in 2013. Previous work was done by Brian O'Neil in 1993, *The Archaeology of the Grand Junction Resource Area: Crossroads to the Colorado Plateau and the Southern Rocky Mountains*. The data for the D-E NCA Class I analysis in 2013 were based upon records current through February, 2012, with the exception of radiocarbon dates that included projects through 2009. Many of the early archaeological surveys were not conducted or reported to current standards. As a result, there was great variability in the reports and the site forms used.

The most recent Class I inventory on the Uncompahgre Field Office (UFO) side of the D-E NCA was completed in 2010 by Alpine Archaeological Consultants (Greubel et al. 2010). Data for the 2010 Class I analysis were based on records current through May 2010 in the UFO database, and on records current through January 2010 on COMPASS -- an online cultural resource database established by the Colorado Office of Archaeology and Historic Preservation.

The 2013 Class I overview for the D-E NCA combines cultural resource information on the Grand Junction Field Office and Uncompahgre Field Office portions of the D-E NCA. This analysis would provide increased understanding of the resources of the area for better management and fill in a significant data gap for the D-E NCA RMP.

## Site Monitoring

Resource conditions are assessed by field observation, cultural resource inventories, and project review. The key questions are whether there is a loss of those characteristics that may qualify the property for listing on the NRHP or would diminish the cultural value of areas important to Native American or other traditional communities.

These characteristics can be affected by physical destruction, damage, or alteration of the resource; isolation of the resource; alteration of setting; neglect resulting in deterioration and destruction; or the transfer, sale, or lease of the resource. Specific indicators include the extent or intensity of natural weathering, erosion, wildfire, ground disturbance, grazing, recreation use, unauthorized collection, intrusions to setting, and vandalism. This loss affects the completeness and accuracy of the scientific information that can be derived from a resource. It also affects the aesthetic, historic, or interpretive value of the resource, and/or the importance of the resource in maintaining social and cultural traditions.

Both BLM cultural program staff and volunteers periodically monitor and document at-risk and potentially at-risk cultural sites for degradation. They look at natural processes (erosion and fire) and erosion impacts exacerbated by human activities. Potentially damaging activities include construction, maintenance, livestock grazing, OHV use, recreation, wildlife impacts, fluid and locatable mineral exploration and development, mineral material sales, and habitat restoration/fuel reduction. Since any BLM initiated or authorized action strives to protect cultural resources, the only human activity that could damage these resources is *unplanned* use.

Unplanned use includes unauthorized recreational vehicle use, unauthorized trail construction, deliberate theft by illegal collection or excavation, vandalism, or the use of cultural sites that results in damage (fires, occupation of historic structures, New Age ceremonial features, etc.). The location of these activities is impossible to predict and may occur in spite of measures designed to eliminate or limit them.

## Data Classification

Through scientific study of cultural resources, the story of adaptation and technological change can be told. Archaeologists simplify the description of prehistory by naming time periods that roughly correspond to cultural attributes or traditions manifested as artifact assemblages and features. Five broad time periods from earliest evidence to recent history, include the Paleoindian, Archaic, Formative, **Protohistoric/Native American**, and Historic. These time periods are used to record human behavior in the area. These periods make generalizations about both behavior and technology. Table 3.26 shows the percentage of currently known sites within the D-E NCA that fall into the cultural time periods of the area. In the case of multicomponent sites (sites with two or more cultures represented), each component was counted separately.

**Table 3.26. Cultural Time Periods Represented in D-E NCA**

Culture Unit	Count	Percentage
Euroamerican	103	12.9
Unidentified Native American	486	61.1
Protohistoric/Historic Native American	71	8.9
Formative	58	7.3
Archaic	71	8.9

Culture Unit	Count	Percentage
Paleoindian	6	0.8
Cultural Affiliation Unknown	1	0.1

## Current Condition of Cultural Resources in the D-E NCA

Prior to designation, development patterns within the D-E NCA were of lesser impact than the surrounding field offices. Projects within the D-E NCA were primarily range improvement projects -- including water development and fire and mechanical treatments for increased forage and to improve wildlife habitat. The geology of the area precluded development of oil and gas in the area currently known as the D-E NCA. Additionally, 73,888 acres were designated the Dominguez Canyon Wilderness Study Area in 1980. This wilderness study area prevented certain types of development that can negatively impact cultural resources. This past management context created a unique environment that preserved and protected cultural resources.

Within the D-E NCA, the condition of cultural resources varies considerably, due to the diversity of terrain, geomorphology, access, visibility, and past and current land use patterns. Cultural sites discovered during inventory are evaluated for eligibility to be listed on the NRHP and are protected through site avoidance, where possible. If avoidance is not possible, testing for NRHP site eligibility and mitigation of impacts through data recovery in the forms of archaeological testing or excavation may be necessary. Consultation with the Colorado State Historic Preservation Office (SHPO) is completed through the Section 106 process.

*Avoidance of direct impact does not mean preservation.* Staff archeologists note that many sites continue to degrade through weathering or erosion, despite the avoidance of impact by human visitation.

On the basis of a data set current to February 2012, approximately 165 cultural resource inventories have resulted in the recordation of over 1,445 sites and isolated finds in the D-E NCA, and approximately 20.9 percent (145,506 acres of the D-E NCA total of 210,012) of the planning area has been surveyed. The data are not broadly representative, because the majority of surveys occurred in areas of range and fuel reduction projects. This figure for area surveyed included all cultural resources regardless of surface ownership, and thus may include inholdings, or lands managed by the State of Colorado.

Additionally, only about 7 percent of the D-E NCA has been surveyed to current standards. Information databases have been improved for the archiving of cultural resource data. In addition to paper records, the Office of Archaeology and Historic Preservation (OAHP), the UFO, and the GJFO have created spatial databases (GIS) to manage this information. Large block surveys since 2000 (for hazardous fuel reduction projects through the National Fire Plan) have added geographical balance to the dataset, and have been a major contributor to the survey and site database.

## Native American Involvement

In 2007, the BLM initiated the Ute Ethnohistory Project -- an early scoping project with Native Americans for three BLM RMPs in western Colorado (the GJFO, UFO and D-E NCA). Scoping presentations were made directly to the three Ute Councils (Southern Ute Indian Tribe, Ute Mountain Ute Indian Tribe and Northern Ute Indian Tribe). This project actively involved Ute Cultural Resource staff and traditional leaders in the identification of issues and concerns.

To date, one of the major issues emerging from the Ethnohistory Project is the conservation of “heritage landscapes” -- large areas that embody not only physical cultural sites, but natural environmental conditions that have remained relatively unaffected by change over the last century. These landscapes could be used by Ute tribal members for field workshops and/or resource gathering. Consultation with the Ute tribes, as well as the archaeological and historic record, has established that the D-E NCA is part of their ancestral homeland. Traditional cultural properties and sacred sites may yet be discovered.

Many Ute tribal members have never been on the public lands in the D-E NCA region, and are only familiar with the general area as they travel through. At present, no locations have been identified as sacred/religious sites by the Ute tribes. Other known cultural resources that are affiliated with the Ute -- such as rock art, wickiup camps, trails, eagle traps, and battle locations -- are known to be of interest to the Ute. It is anticipated that our understanding of cultural resources as heritage sites important to the Ute will change. Programs have been developed to work with students, adults, and elders to reconnect them to their traditional lands and resources.

## Existing Projects in the D-E NCA

**Interpretation:** Interpretive signs and handouts are available at several trailheads and other locations. This was accomplished in partnership with the Museum of Western Colorado and with funding support from History Colorado, State Historical Fund grants.

**Active partnerships:** Dominguez Archaeological Research Group (DARG), and History Colorado are conducting joint research projects. Tribal partnership projects include the Ute Ethnobotany Project with the Ute Indian Tribe (Northern Ute), USFS, Colorado Mesa University, Colorado State University Agricultural Extension Service, and Museum of Western Colorado. The Ute Ethnobotany Project brings Ute students and elders out to reconnect with their ancestral homeland and learn more about the native use of plants for medicine, food, shelter, clothing and more. Partnerships are in place with the Colorado Archaeological Society (CAS) Chipeta Chapter and with Western Wyoming College to conduct surveys and implement site testing and monitoring of individual cultural properties.

**Site stewards:** Volunteers are sought to formally monitor at-risk cultural resources, such as rock-art sites, located in sensitive portions of the D-E NCA. Site stewards assist the BLM archaeologists by monitoring for changes (both natural and human caused) at archaeological sites. Occasionally, they join the BLM archaeologists in research surveys to learn more about the cultural resources present on our public lands.

## 3.2.4. Wilderness

### Definition of Wilderness

The Wilderness Act of 1964 established a National Wilderness Preservation System and identified a wilderness area as “an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain.” The Wilderness Act goes on to further define a wilderness area as “an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which



1. generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;
2. has outstanding opportunities for solitude or a primitive and unconfined type of recreation;
3. has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and
4. may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value

Section 2(a) of the Wilderness Act requires the BLM to manage wilderness areas so as to lead to, “the preservation of their wilderness character.” Although the Wilderness Act clearly instructs land-management agencies to protect the wilderness character of an area, it provides no definition of wilderness character. The definition of wilderness in Section 2(c) of the Wilderness Act is used by Federal agencies to identify four tangible qualities of wilderness character, saying a wilderness should be: untrammeled, undeveloped, natural, and provide outstanding opportunities for solitude or primitive and unconfined recreation.

The Federal Land Policy and Management Act of 1976 and the Wilderness Act (16 U.S.C. 1131–1136) direct the BLM to manage wilderness areas for the public’s use and enjoyment in a manner that will leave these areas unimpaired for future use and enjoyment as wilderness by providing for protection of those areas and the preservation of their wilderness character. BLM Manual 6340 (BLM 2012d) provides the BLM with specific guidance in interpreting and carrying out wilderness management goals for designated wilderness. The BLM accomplishes its wilderness management goals by taking actions to preserve the four primary qualities of wilderness character described below. However, there is inherent conflict between some or all of these qualities, leading the BLM to make management decisions that may lead to trade-offs between them.

- **Untrammeled**—wilderness is essentially unhindered and free from modern human control or manipulation. The untrammeled quality of wilderness is degraded by manipulating “the community of life.” Examples include spraying weeds, suppressing fire, lighting fire, stocking fish and wildlife, or killing predators.
- **Natural**—wilderness ecological systems are substantially free from the effects of modern civilization. Examples of how the natural quality of wilderness is degraded include the occurrence of non-native species, vegetation communities (upland and riparian) not meeting Land Health Standards, extirpated or extinct native animals and plants, and the disruption of wildlife migration corridors.
- **Undeveloped**—wilderness retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation. The undeveloped quality of wilderness is degraded by the presence of structures or installations such as stock tanks, water developments, or scientific installations, the use of motor vehicles, motorized equipment, or mechanical transport, and inholdings.
- **Solitude or primitive and unconfined recreation**—wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation. This quality is degraded by the presence of facilities that decrease self-reliant recreation, management restrictions on

visitor behavior, the sights and sounds of people inside wilderness, and the sights and sounds of occupied and modified areas outside the wilderness.

A single decision or action may affect more than one of the qualities described above. For example, the decision to build a water gauging station within a wilderness would affect at least two qualities. The decision to build it would degrade the untrammeled quality, and the continued presence of the structure would degrade the undeveloped quality. Furthermore, a decision or action to improve one quality may simultaneously degrade another quality. Building a bridge to reduce site impacts at a stream crossing may improve the natural quality, but it would degrade the undeveloped and the solitude or primitive and unconfined type of recreation qualities.

## **Current Condition**

The Dominguez Canyon Wilderness (the Wilderness) was designated under the Omnibus Public Land Management Act of 2009, the same act that created the D-E NCA. The Wilderness is a 66,280-acre area located within the D-E NCA. The Wilderness is part of what was once the Dominguez Canyon Wilderness Study Area. The sandstone canyons and pinyon-juniper covered mesas of the Wilderness offer excellent opportunities for solitude and primitive types of recreation. Year-round, water runs through the Little Dominguez Creek creating a great habitat for many birds, mammals and reptiles. Desert bighorn sheep have been reintroduced to the area and visitors can often see the sheep grazing at the base of the cliffs in the Wilderness. Rock art on the canyon walls and wickiups on the mesas testify to the thousands of years the Native Americans used the area for hunting, shelter and as a travel corridor from the Gunnison River Valley to the Uncompahgre Plateau. These canyons also show traces of the early miners and settlers who lived and worked throughout the area.

In 2010, the four wilderness managing agencies (BLM, United States Forest Service, National Park Service, and United States Fish and Wildlife Service) began implementing the “Keeping it Wild” wilderness monitoring program. This interagency project was designed to monitor the four main qualities of wilderness character listed above as well as the fifth quality of “unique and supplemental values.” The “Keeping it Wild” monitoring protocol was completed for the Dominguez Canyon Wilderness in early 2011 and consists of data from the 2010 calendar year. The results of this monitoring are summarized below by quality of wilderness character.

### **Untrammeled**

Under the Keeping It Wild monitoring program, the indicators for untrammeled include the number of authorized actions taken that manipulate biological resources or natural processes (e.g., vegetation treatments, manipulations of wildlife habitat, manipulating wildland fire, etc.) Using these indicators, the Dominguez Canyon Wilderness is considerably untrammeled. There were a total of five chemical control weed treatments within the Wilderness in 2010. There were no natural fire starts in 2010, and no unauthorized actions by any group to manipulate plants, animals, pathogens, soil, water, or fire.

### **Natural**

Under the Keeping It Wild monitoring program, the indicators for naturalness include the status of native biological communities, the abundance and distribution of non-indigenous species, and the actual AUMs of livestock use inside the Wilderness.

Like the D-E NCA as a whole, the BLM went through a process to identify priority vegetation/habitat types and priority species within the Wilderness. Through this process the BLM identified the following priority vegetation/habitat types within the Wilderness: desert shrub/saltbush, pinyon-juniper woodlands, sagebrush shrublands, riparian, seeps and springs and aquatic systems. Desert bighorn sheep and Colorado hookless cactus were identified as priority species, as these species require management beyond management of their habitat types. Once these priority vegetation/habitat types and species had been determined, the BLM identified the key attributes and associated indicators of health for each priority vegetation/habitat type and species. The planning team then established standards for each indicator so that its current condition could be summarized as “poor,” “fair,” “good,” or “very good.” See Appendix G for a detailed summary of these attributes, indicators and current condition of these indicators for the Wilderness.

As explained above, indicators and standards were developed for each priority vegetation/habitat type and priority species to determine an overall ranking of either “poor,” “fair,” “good,” or “very good.” These indicators and standards are being used to define naturalness in the Wilderness. Using this system, the current status of the native biological communities in the Wilderness is summarized in Table 3.27 (see Appendix G for more detail):

**Table 3.27. Overall Current Rating for Priority Vegetation/Habitat and Species in the Wilderness**

Priority Vegetation/Habitat Type or Species	Overall Current Rating
Desert shrub/saltbush	Good
Pinyon-juniper woodlands	Very Good
Sagebrush shrublands	Good
Riparian	Very Good
Seeps and springs	Good
Aquatic systems	Good
Desert bighorn sheep	Fair
Colorado hookless cactus	Good

In general, the priority vegetation/habitat and priority species in the Wilderness are relatively healthy and are healthier than non-wilderness lands within the D-E NCA. There are, however, some issues that are described below.

Although the desert shrub/saltbush vegetative type is much healthier within the Wilderness than on non-wilderness lands within the D-E NCA, there are still too many acres lacking site-appropriate mixtures of warm and cold season grasses, shrubs and forbs. There are also too many acres with high composition of non-native plants, specifically cheatgrass. Both of these indicators currently rank as “fair” (Appendix G). In particular, a number of acres on the McCarty Bench have a high composition of non-native plants and an inappropriate mixture of warm and cold season grasses, shrubs and forbs. These acres were determined to be “not meeting” Colorado Standards for Public Land Health when last surveyed in 2009.

In regard to sagebrush shrublands, three indicators were judged to be in “poor” or “fair” condition (Appendix G). The expected composition of the Wilderness’s sagebrush shrubland plant communities is unbalanced (i.e., an unnatural ratio of grass to shrub to forb). There are also too many acres in the Wilderness with an overabundance of the non-native crested wheatgrass, which was planted in the 1960s and reduces the biological diversity and ecological value of the community. In addition, there are too few acres providing sufficient habitat for Gunnison sage-grouse, which require sagebrush cover between 10-30 percent.

In regard to aquatic systems, two indicators are currently ranked as “poor” (Appendix G). This is due to a lack of native trout in the upper reaches of the Dominguez watershed, which is instead dominated by non-native rainbow and brown trout, and due to the inaccessibility of the lower reaches of Big and Little Dominguez Creeks to fish coming out of the Gunnison River to spawn. This prevents the natural movement of the Gunnison River’s native fish species, which include federally threatened and endangered fish species, as well as BLM sensitive fish species.

Desert bighorn sheep were reintroduced into the area of the D-E NCA beginning in 1983. Although the size of the Dominguez desert bighorn sheep herd is currently ranked as “good,” the indicator relating to the potential for disease transmission is currently ranked as “poor” within the Wilderness. There are no domestic sheep grazing allotments in the Wilderness. However, domestic goats can be currently found in Little Dominguez Canyon due to the continued occupancy of a homestead that was deeded to the BLM by Mr. Billyie E. Rambo. He continues to maintain his residence in the Wilderness under a “life lease” agreement, and he has maintained a small flock of goats in the core area for the bighorn sheep since before the bighorns were introduced. Association between goats and wild bighorn sheep is a concern from a disease transmission standpoint, because goats are not as “gregarious” (i.e., likely to group together) as some breeds of domestic sheep. In addition, the lack of a herder or monitor makes it difficult to detect when intermingling occurs.

Non-indigenous species are not significantly impacting the natural character of the Dominguez Canyon Wilderness. Nine invasive species have been documented within the Wilderness and only four of them in an area of significant size (see Table 3.28 below).

**Table 3.28. Weeds in the Wilderness**

Species	Acres	Percentage of Wilderness
Bull thistle	0.26	0.001%
Canada thistle	87.77	0.137%
Common burdock	0.26	0.001%
Field bindweed	0.003	0%
Halogeton	90.89	0.137%
Musk thistle	0.259	0.001%
Russian knapweed	16.2	0.0245%
Tall whitetop	0.26	0.001%
Tamarisk	74.67	0.119%
Total	270.57	0.41%

Livestock grazing is a historic use in the Dominguez Canyon Wilderness. The 2009 designating legislation directed the BLM to manage established livestock grazing in the Wilderness in accordance with the 1964 Wilderness Act and the guidelines set forth in Appendix A of the report of the Committee on Interior and Insular Affairs of the House of Representatives accompanying H.R. 2570 of the 101st Congress (commonly referred to as the Congressional Grazing Guidelines). Established grazing in the Wilderness is managed under three allotments; the Gibbler Common Allotment, the Wagon Park Allotment, and the Dominguez Allotment (Table 3.29). All three allotments include lands both inside and outside of the Wilderness. The actual use of all three allotments varies from year to year depending on a variety of factors including, but not limited to, weather, forage, available water, and permittee operations. As such, actual AUMs inside the Wilderness are estimates based on permittee post-use reporting and the rangeland management specialist’s knowledge of the allotment.

**Table 3.29. Grazing in the Wilderness**

<b>Allotment</b>	<b>AUMs Used</b>	<b>Comments</b>
<b>Dominguez</b>	~500-1,000	The grazing permit for the Dominguez Allotment authorizes 4,800 AUMs of grazing use. 35,366 acres (61%) of the allotment are in the Wilderness. Livestock operators use the Wilderness along the Gunnison River to move cattle between the permittee's private property holdings. Livestock operations also use the mesas and ridges in the southern part of the Wilderness. Since there are no livestock water developments in the Wilderness part of the allotment, use is limited in much of the allotment to times when snow is available. When snow is available, up to 1,200 AUMs are used in the Wilderness. If snow is not available, the number of AUMs used in the Wilderness part of the allotment is significantly less, and the Wilderness portion of the allotment that is used for grazing is primarily along the Gunnison River.
<b>Wagon Park</b>	440	The grazing permit for the Wagon Park Allotment authorizes 1,164 active animal-unit months (AUMs) of grazing use. 20,110 acres (62%) of the allotment are in the Wilderness. Livestock operators use the Wilderness (Big Dominguez Canyon in the Spring and Little Dominguez Canyon in the fall) to trail cattle. Operators in this allotment also use the Wilderness for grazing on the benches below Wagon Park, Steamboat Mesa, Middle Mesa, Long Mesa and around Starr Mesa in the fall. The allotment is intensively managed outside the Wilderness (vegetation treatments, pasture fences, water developments, etc.). As a result, the majority of the AUMs used in the allotment are outside the Wilderness.
<b>Gibbler Commons</b>	680	The grazing permit for the Gibbler Common Allotment authorizes 3,275 active AUMs. 10,601 acres (20%) of the allotment are in the Wilderness. Within the allotment, there are two general uses of the Wilderness for livestock operations. First, the Horse Mesa part of the Wilderness is used as part of a pasture rotation. On a rotating basis, cattle use the Farmers Canyon (which does not include the Wilderness) pasture during the spring and the Slope pasture (which includes the Horse Mesa part of the Wilderness) in the fall/winter. The current operations rotate this use pattern every two years. The second use of the Wilderness in the Gibbler Allotment is around Triangle Mesa. This part of the Wilderness is used in the fall/winter as cattle from the Wagon Park Allotment are moved either into Cactus Park or along the Gunnison River. The allotment is intensively managed outside the Wilderness (vegetation treatments, pasture fences, water developments, etc.). Combined with the low percentage of wilderness in the allotment, the intensive management outside the Wilderness results in the majority of actual AUMs in the allotment being used outside the Wilderness.
<b>Total Annual Use:</b>	~1,620-2,120	

### Undeveloped

Under the Keeping It Wild monitoring program, the indicators for undeveloped include physical developments or structures (buildings, fences, corrals, mines, etc.), the number of times motorized vehicles use the Wilderness (both authorized and unauthorized), and the impact of inholdings. There is one residential structure complex within the Wilderness. The Billyie E. Rambo homestead in Little Dominguez Canyon consists of an old house, an outbuilding, old farming implements, ranching and farming supplies. The property the homestead occupies has been deeded to the BLM, and Mr. Rambo has a lease to occupy the property for his lifetime.

There are approximately 5.2 miles of fencing within the Wilderness. There are 33 separate fences in the Wilderness. All the fences were developed for livestock management. Most (29) are constructed with either barbed wire or woven wire. There are a few brush fences on Camp Ridge and along the Gunnison Pack Trail. There are two corrals, one constructed with posts and poles, near the mouth of Dominguez Canyon and one constructed with brush along the McCarty Trail.

There is a steel gate along the Triangle Mesa route. The gate was installed by the BLM during the period the area was managed as a WSA to restrict motorized travel around Triangle Mesa.

There are 13 water developments within the Wilderness (9 in the Wagon Park allotment, 4 in the Gibbler Common allotment and none in the Dominguez Allotment ). Additionally, prior to the Omnibus Act there was a proposal to construct seven earthen ponds in the Dominguez Allotment portion of the Dominguez Canyon Wilderness Study Area. The ponds were first proposed in the early 1980s and have not been constructed. The Omnibus Act states that the BLM “may allow construction of new livestock watering facilities within the Wilderness in accordance with (i) section 4(d)(4) of the Wilderness Act; and 2) the guidelines set forth in Appendix A of the report of the Committee on Interior and Insular Affairs of the House of Representatives accompanying H.R. 2570 of the 101st Congress (H. Rept. 101–405).” New facilities will be permitted by the BLM only for the purpose of enhancing the protection of wilderness character (BLM 2012d).

None of the existing water developments are slated for closure, and all are judged in good working order. The impoundments are all on ephemeral streams and have no impact on year-round streams.

There are two existing rights-of-way within the Wilderness. Both C17563 and C20070 at Steamboat Spring are public water withdrawals from land laws and mineral entry. In addition to these ROWs, there are three known abandoned mines within the Wilderness. All three have been reclaimed according to Abandoned Mine Reclamation standards.

All three livestock allotments have authorized motorized use. Permittees generally use motorized vehicles to distribute salt and check the status of water developments. CPW monitors the bighorn sheep herd with helicopter flights. Occasionally, the helicopter lands inside the Wilderness. Unauthorized motorized use does occasionally occur in the Wilderness. Generally the unauthorized use is limited to the areas along the boundary. Occasionally, wilderness patrol reports note unauthorized motorized use deep into the Wilderness along the McCarty and Gunnison Pack Trails.

There is only one inholding within the Dominguez Canyon Wilderness. CPW has a 640-acre parcel on Sowbelly Ridge, Tatum Ridge, and Camp Ridge. There is very little chance of further development of this area.

### **Opportunities for Solitude and Primitive and Unconfined Recreation**

Under the “Keeping It Wild” monitoring program, the indicators for opportunities for solitude include the amount of visitor use, the number of miles of routes, the number of the BLM-provided recreation facilities, the number of user-created recreation facilities, and the number of management restrictions placed on users.

Visitor use of Dominguez Canyon Wilderness is best described as light to moderate and subject to seasonal variations. The BLM estimates total recreational use of the Wilderness is approximately 12,000 visits per year, on the basis of trail counters and patrol observations.

There are five primary recreation access points to the Wilderness (Cactus Park, Dominguez Campground/Trailhead, the Gunnison Pack Trail, the McCarty Trailhead, and the mouth of Dominguez Canyon). In 2005, the BLM constructed a bridge across the Gunnison River at Bridgeport to provide safe, legal foot access to the Dominguez Canyon Wilderness Study Area – in contrast to hikers trespassing over a nearby, private bridge. The BLM estimates recreational use in the Wilderness via the Bridgeport Bridge totals 9,000 visits per year (75 percent of all wilderness visitation).

The other popular access to Big Dominguez Canyon is by boaters on the Gunnison River. There are several popular campsites outside the Wilderness at the mouth of Big Dominguez Canyon. Many float groups consist of up to 25 people leading to occasional crowding and temporary loss of solitude if they all hike into the Wilderness together.

The Dominguez Campground is located adjacent to the Wilderness boundary at the top end of Big Dominguez Canyon. The campground is at an elevation of 7,000-feet, which prevents much use during the winter but is more comfortable during the summer. Visitors can hike into the upper end of Big Dominguez Canyon from this site, with the majority of visitors only hiking a mile or two before turning around.

Other common access points to the Wilderness include the Cactus Park Trailhead and the McCarty Trailhead in Escalante Canyon.

The number of miles of routes in a wilderness and the amount of recreation facilities can influence the quality of both solitude and primitive types of recreation. Routes provide easier access to visitors. As a result, the opportunity for primitive types of recreation is enhanced (i.e., a hike or horseback ride is more enjoyable on a route than cross-country). Conversely, the presence of a route can result in fewer opportunities for solitude (i.e., people are more apt to be on routes than off routes, increasing the chances that a visitor would encounter other visitors). Recreation facilities are similar. Available facilities can enhance a recreation outing (e.g., a trail sign can make navigation easier), and the more facilities available can result in increased visitation. The result is fewer opportunities for solitude.

There are 100.6 miles of routes in the Wilderness (22.4 miles of single track and 78.2 miles of double track). There are no trail signs or other BLM-provided recreation facilities inside the Wilderness. Twelve user-created undeveloped campsites have been documented inside the Wilderness.

### **Unique and Supplemental Values**

Under the “Keeping It Wild” monitoring program, the indicators for unique and supplemental values include the status of cultural resources and status of indigenous species that are listed, or are candidates for listing, as threatened or endangered. The Dominguez Canyon Wilderness is known for the presence of Colorado hookless cactus and a wealth of cultural resources. Cultural resources are discussed in greater length in other sections of this document, but it should be acknowledged that they drive visitor use and may require special protective management within the Wilderness at some point in the future.

### **Wilderness Focus Groups**

In December 2010, Colorado Mesa University’s Natural Resource and Land Policy Institute held two focus groups on wilderness issues. The Grand Junction focus group had 27 participants and the Delta focus group had 13. Both meetings followed the same script with some minor additions based upon conversation and questions, particularly in the Delta group.

The focus groups were set up to determine community preferences for future management of the Dominguez Canyon Wilderness. Emphasis was placed on the preservation of wilderness character and more specifically on the inherent qualities of wilderness character. Some trade-offs could arise when one or more qualities conflict with each other.

Five qualities (untrammelled, natural, undeveloped, solitude and unconfined recreation, unique and supplemental values) were explained to participants at the beginning of each meeting. A series of questions were then asked in which participants were given a choice between two potential trade-offs for one or more of the qualities of wilderness character. Participants used a hand-held clicker to make a selection on a range of 1 to 5, representing whether they felt strongly about one quality over another, had a milder preference for one quality, or didn't have a preference at all. The focus group concluded with a series of questions based upon five wilderness zones created by the BLM for these meetings. Participants were asked to identify their most important quality for each wilderness zone, their second most important quality for each zone, and their least important.

### Example of a Wilderness Focus Group Question:

*Title:* removal of an old gate

*Trade-off:* untrammelled vs. undeveloped

*Situation:* a large metal gate was installed on an old route before the area was designated as wilderness. Should the BLM go in and remove the gate (trammeling the Wilderness) to improve the undeveloped character of the Wilderness?

Participants then had 15-20 seconds to make a selection from one of five choices:

**A** – strongly prefer untrammelled

**B** – somewhat prefer untrammelled

**C** – I don't know or I don't prefer one to the other

**D** – somewhat prefer undeveloped

**E** – strongly prefer undeveloped

Responses to this question are shown in Table 3.30 below.

**Table 3.30. Responses by Community**

Response	Delta	Grand Junction	Both Focus Groups
Response A	5	5	10
Response B	1	6	7
Response C	1	3	4
Response D	1	5	6
Response E	1	6	7
Total	9	25	34

For example, a Delta participant's comment about the first question was "*it's just taxpayer money to take the gate down, it's a waste of money.*" Delta participants were clearly in favor of not removing the gate (6 to 2) and maintaining the untrammelled character of the Wilderness, whereas Grand Junction participants were evenly split (11 to 11) between removing the gate and leaving the gate.

The focus groups concluded with a series of questions designed to determine what participants felt was the most important quality of wilderness character within the Dominguez Canyon Wilderness.



Through responses to these questions, some themes emerge about the participants' views about future management direction of the Wilderness. There were significant differences between attitudes of the Delta focus group and the Grand Junction focus group. The Delta focus group showed a strong, steady preference for preserving the untrammelled character of the Wilderness as well as maintaining the opportunity for unconfined recreation. The Grand Junction focus group was more diverse in their responses but with a general preference in favor of naturalness and the unique and supplemental qualities of the Wilderness

### **3.2.5. Lands with Wilderness Characteristics (outside of Dominguez Canyon Wilderness and Remaining Wilderness Study Areas)**

Through the land use planning process, the BLM will consider all available information to determine the mix of resource use and protection that best serves the FLPMA multiple use mandate. The BLM has numerous authorities under FLPMA to maintain inventories of all public lands and their resources, including wilderness characteristics, and to consider such information during land use planning processes. During the D-E NCA RMP process, the BLM completed a review of lands within the D-E NCA to determine whether they possess wilderness characteristics. This review included only BLM lands outside the Dominguez Canyon Wilderness and WSA. Wilderness characteristics include naturalness and outstanding opportunities for solitude and/or primitive and unconfined recreation within an area of sufficient size to allow associated management and protection.

Through this updated inventory, the BLM is meeting its obligations for updating and maintaining an inventory of wilderness resources under sections 102, 201, and 202 of FLPMA. In addition, BLM H-1601-1, *Land Use Planning Handbook* (BLM 2005), identifies broad decisions that guide future land management actions and subsequent site-specific implementation decisions. Specifically, Appendix C, Part K of this handbook directs field offices to identify decisions to protect or preserve wilderness characteristics. Findings of wilderness character do not obligate further management to maintain that character, rather, the agency task is to explain what might occur to that character through management decisions.

The updated wilderness characteristics inventory is designed to answer the following question: do any portions of the D-E NCA lands outside of the Dominguez Canyon Wilderness and WSA meet the overall criteria for wilderness character? The process of updating the inventory included the identification of wilderness inventory units, an inventory of roads and wilderness character, and a determination of whether the area meets the criteria for wilderness character. Units found to possess such character are evaluated during the land use planning process to address future management. The following factors are documented in the updated inventory:

1. Size: For an area to qualify as lands with wilderness characteristics, it must possess sufficient size:
  - a. Roadless areas over 5,000 acres of contiguous BLM lands. Non-Federal lands are not considered.
  - b. Roadless areas under 5,000 acres of contiguous BLM lands where any of the following applies:

- i. Contiguous with lands formally determined to have wilderness or potential wilderness values
  - ii. or with any Federal lands managed for the protection of wilderness characteristics, including designated wilderness, BLM WSAs, USFWS areas proposed for wilderness designation USFS WSAs or areas recommended for designation as wilderness, and NPS areas recommended or proposed for designation. Does not include NPS areas merely considered eligible for wilderness study or USFS roadless areas unless also designated or recommended for designation through a forest plan revision.
  - iii. Of sufficient size to make practicable their preservation and use in an unimpaired condition.
2. Naturalness: Lands and resources exhibit a high degree of naturalness when affected primarily by the forces of nature and where the imprint of human activity is substantially unnoticeable. An area's naturalness may be influenced by the presence or absence of roads and trails, fences or other developments, and the nature and extent of landscape modifications.
3. Outstanding Opportunities for Solitude or Primitive and Unconfined Types of Recreation: Visitors may have outstanding opportunities for solitude, or primitive and unconfined types of recreation, when the sights, sounds, and evidence of other people are rare or infrequent, where visitors can be isolated, alone or secluded from others, or where the use of an area is through non-motorized, non-mechanized means.
4. Supplemental Values: These include ecological, geological, or other features of scientific, educational, scenic, or historical value.

The BLM used all available information while updating the inventory, including public proposals, scoping comments, GIS data, program specialist's knowledge, field visits, and existing wilderness inventory documents.

### Inventory Findings

The updated inventory for lands with wilderness characteristics outside the Dominguez Canyon Wilderness and WSA identified four areas (21,817 total acres) that possess wilderness characteristics. A summary of these four areas is included in Table 3.31, Areas with Wilderness Characteristics, and the text that follows (Map 3–26). The complete, updated inventory (BLM 2012k) can also be found online: <http://1.usa.gov/1qKkMVi>

**Table 3.31. Areas with Wilderness Characteristics**

Lands with Wilderness Characteristics Area	Size (Acres)
Cottonwood Canyon	6,576
Dry Fork of Escalante	7,021
Dominguez Addition	3,025
Gunnison Slopes	5,194

The Cottonwood Canyon area is approximately 10 miles west of the City of Delta in the D-E NCA, and includes portions of Cottonwood Creek. The area was found to be of sufficient size and natural condition to qualify as lands with wilderness characteristics, and was found to possess outstanding opportunities for solitude and primitive and unconfined recreation. Supplemental

values identified in the area include habitat for desert bighorn sheep and bald eagles (both BLM sensitive species) and an excellent occurrence of the narrowleaf cottonwood/skunkbush vegetation community. Existing uses of the area include livestock grazing and non-motorized recreation.

The Dry Fork of Escalante area is approximately 10 miles west of the City of Delta in the D-E NCA. The unit includes the main drainage of the Dry Fork of Escalante Creek, which intermittently flows into Escalante Creek. The area was found to be of sufficient size and natural condition to qualify as lands with wilderness characteristics, and was found to possess outstanding opportunities for solitude and primitive and unconfined recreation. Supplemental values identified in the area include habitat for desert bighorn sheep and bald eagles (both BLM sensitive species). Existing uses of the area include livestock grazing and recreation, including some OHV recreation use along primitive routes in the area.

The Dominguez Addition area is located on the southwest boundary of the recently designated Dominguez Canyon Wilderness in the D-E NCA. This area was originally inventoried by the BLM in 1980 and was found to not contain wilderness characteristics. The subsequent inventory update completed in 2012 found the area to be of sufficient size and natural condition to qualify as lands with wilderness characteristics, and found that the area possessed outstanding opportunities for solitude and primitive and unconfined recreation. Supplemental values identified in the area include a high concentration of cultural resources. Existing uses of the area include livestock grazing and recreation, particularly hunting and hunting-related recreation. Some motorized use by ATV occurs along primitive routes in the area.

The Gunnison Slopes area is located approximately 11 miles south of Grand Junction in the D-E NCA, confined by a cliff band to the west and the Gunnison River to the east. Directly south of the area is the Dominguez Canyon Wilderness, which is separated from the Gunnison Slopes area by a primitive road. This area was originally inventoried by the BLM in 1980 and found to not contain wilderness characteristics. The subsequent inventory update completed in 2012 found the area to be of sufficient size and natural condition to qualify as lands with wilderness characteristics, and was found to possess outstanding opportunities for primitive and unconfined recreation. Supplemental values in this area include the Colorado hookless cactus and important habitat for desert bighorn sheep. Existing uses of the area include livestock grazing and non-motorized recreation.

### **3.2.6. Scenic Resources**

The scenic resources of the D-E NCA were identified as a purpose of the area's designation in the Omnibus Act of 2009. The planning area lies within the Colorado Plateau and Southern Rocky Mountains physiographic provinces. The area's landscapes show a wide range of variation from the open, rolling desert hills of the Hunting Ground to the red-rock walls of Big and Little Dominguez and Escalante Canyons to the rugged, remote landscapes nearest to the boundary between the D-E NCA and USFS lands. The waters of the Gunnison River provide a striking contrast to the arid landscape of much of the D-E NCA.

The BLM's visual resource management (VRM) system provides a way to identify and evaluate scenic values to determine appropriate levels of management. It also provides a way to analyze potential visual impacts and apply visual design techniques to ensure that surface-disturbing activities are in harmony with their surroundings.

## How Visual Resources Are Inventoried

The first stage of the BLM's VRM system involves identifying the visual resources of an area and assigning them to inventory classes using the BLM's visual resource inventory process. The process involves rating the visual appeal of a tract of land, measuring public concern for scenic quality, and determining whether the tract of land is visible from travel routes or observation points. The visual resources in the D-E NCA were inventoried as part of the Grand Junction and Uncompahgre RMP revisions. The Visual Resource Inventory (VRI) includes three primary components:

- Scenic Quality Evaluation
- Sensitivity Level Determination
- Delineation of Distance Zones

The *Scenic Quality Evaluation* measures the visual appeal of a landscape. Scenic quality is determined by reviewing landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modifications.

*Sensitivity Levels* are a measure of public concern for the scenic quality. BLM-administered public lands are assigned high, medium, or low sensitivity levels on the basis of a number of factors including type of users, amount of use, public interest, adjacent land uses, and special areas.

*Distance zones* are based on the relative visibility from travel routes. Distance zones include the foreground-middleground (3–5 miles from viewing locations), background (5–15 miles from viewing locations), and seldom seen (areas not seen).

These primary components were evaluated to assign VRI Classes to the BLM-administered public lands in the D-E NCA. Class I is assigned to those areas where a management decision has been made previously to maintain a natural landscape. This includes areas such as national wilderness areas, national wild and scenic rivers, and other congressionally and administratively designated areas where decisions have been made to preserve a natural landscape. In the D-E NCA, the Dominguez Canyon Wilderness was assigned Class I. Other than Class I areas, Class II areas are the most valued, Class III is moderately valued, and Class IV is least valued.

## Inventory Results

Using the BLM's VRI process, the D-E NCA's visual resources were evaluated as part of the Grand Junction and Uncompahgre RMP Revisions (Map 3–27). The results of the inventory are shown in Tables 3.32 to 3.35 below.

**Table 3.32. VRI Inventory Class**

Visual Resource Inventory Class	Acres
I	67,126
II (Most Valued)	76,361
III (Moderately Valued)	52,373
IV (Least Valued)	22,533

**Table 3.33. VRI Scenic Quality Rating**

Scenic Quality Rating	Acres
A (High Visual Appeal)	13,944
B (Moderate Visual Appeal)	54,440
C (Low Visual Appeal)	74,747
Not Surveyed (Wilderness)	66,280

**Table 3.34. VRI Sensitivity Rating**

Sensitivity Rating	Acres
High	120,597
Medium	14,070
Low	8,463
Not Surveyed (Wilderness)	66,280

**Table 3.35. VRI Distance Zone**

Distance Zone	Acres
Foreground/Middleground	143,131
Background	0
Seldom Seen	0
Not Surveyed (Wilderness)	66,280

## Visual Resource Management

The second stage in the BLM's VRM system is the designation of visual resource management classes. VRM classes determine the allowable level of change to landscapes. VRM Class designations are made in RMP revisions or amendments. The following criteria are used to determine the type and level of change allowed:

- **Class I Objective:** The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
- **Class II Objective:** The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Changes can be seen but should not attract the attention of the casual viewer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- **Class III Objective:** The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- **Class IV Objective:** The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to

minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

### 3.2.7. Air Resources

This section discusses the regulatory framework and current condition of the air resources and climate of the D-E NCA.

#### Air Quality

The Federal Government and State governments have established ambient air quality standards for criteria air pollutants, including carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter (PM) less than or equal to 10 microns in size (PM<sub>10</sub>), PM less than or equal to 2.5 microns in size (PM<sub>2.5</sub>), ozone, and lead. Ozone is typically not emitted directly from emission sources, but at ground level, it is created by a chemical reaction between ozone precursors, including oxides of nitrogen and volatile organic compounds (VOCs). The State of Colorado, Department of Health and Environment, Air Pollution Control Division enforces National Ambient Air Quality standards for ozone as delegated under the Clean Air Act. For the three counties that make up the D-E NCA, air emissions data for 2008 are as shown in Table 3.36.

**Table 3.36. Air Pollutant Emissions by County (Tons per Year)**

County	CO	NO <sub>2</sub>	PM <sub>10</sub>	Benzine	SO <sub>2</sub>	VOC
Delta	12,132	1,572	2,504	46	48	18,106
Mesa	40,688	9,048	8,050	161	2,879	39,828
Montrose	19,533	3,665	5,823	71	1,358	21,220

*Source: [www.co.gov/airquality/inv\\_maps\\_2008.aspx](http://www.co.gov/airquality/inv_maps_2008.aspx)*

Since most of the planning area is rural, actual air quality is likely to be cleaner than that measured in towns, and especially cleaner than the Denver metropolitan area. The entire D-E NCA planning area is classified as having good air quality. Inversions can form over parts of the D-E NCA, and dust storms can stir up geologic dust, causing temporary particulate problems, according to Delta County Environmental Health. The air quality criteria pollutant most likely to occur is inhalable particulate matter, specifically particles 10 microns or less in diameter (PM<sub>10</sub>) associated with fugitive dust. The Colorado Air Pollution Control Division (APCD) estimates the maximum PM<sub>10</sub> levels (24-hour average) in rural portions of western Colorado to be near 50 micrograms per cubic meter (g/m<sup>3</sup>). This estimate is well below the National Ambient Air Quality Standard (NAAQS) for PM<sub>10</sub> (24-hour average) of 150 g/m<sup>3</sup>.

There have been large dust storm events in and around the planning area in recent years. Neff et al. (2008) determined that dust load levels increased by 500 percent above the late Holocene average following the increased western settlement of the United States during the nineteenth century. The authors suggest that the increased dust deposition is caused by the expansion of livestock grazing in the early twentieth century.

The increased pace of energy development on the Western Slope and motorized recreation may contribute to fugitive dust raised on unpaved roads and trails. This can contribute significant air-quality problems. Fugitive dust may impact more total area than any other impact of roads, paved or unpaved (Forman et al. 2003), and it can have significant effects on ecosystems (Westec Services 1979). Dust is created and raised into the air as motor vehicles disturb soil crusts, abrade

and pulverize soils, and generate wind currents. Once soil surfaces are disturbed, wind erosion may increase the amount of debris flow, such as dust plumes that can extend for hundreds of miles (Lovich and Bainbridge 1999).

When soils are severely disturbed, vegetation cover can be reduced significantly (Bolling and Walker 2000) and growth impaired (Spencer, Scott, Port, and Davison 1988; Angold 1997).

The EPA classifies all locations in the United States as either “attainment” (including “unclassified”), “nonattainment,” or “maintenance” areas, under National Ambient Air Quality Standards (NAAQS). These classifications are determined by comparing actual monitored air pollutant concentrations to their applicable Federal standards. Most counties in western Colorado are classified as attainment areas for all pollutants (only a small area around the city of Telluride, Colorado, is a PM<sub>10</sub> maintenance area).

The BLM completed an air emissions inventory for the D-E NCA. Year 2008 was chosen as the base year for estimating actual emissions as this was the most recent year available for existing emissions sources within the planning area to contrast with BLM authorized activity emissions.

The following list of emission generating activities were identified as those management actions and activities currently authorized, permitted, allowed or conducted in the D-E NCA that could potentially emit regulated air pollutants and could potentially cause impacts to air quality within the planning area and Class I areas within 100 kilometers of the planning area:

- Livestock Grazing
- Recreation (particularly OHV use)
- Comprehensive Travel and Transportation Management (particularly route maintenance)

Emissions from recreation are the major contributor to total estimated criteria pollutant emissions under all alternatives. For GHG pollutants, grazing was the major contributor of emissions on a CO<sub>2</sub>e basis. It is important to note that the emission numbers in Tables 3.37 and 3.38 below should not be considered definitive. For additional information on the emissions inventory please refer to Appendix P, Air Resources.

**Table 3.37. Estimated Criteria Pollutant Emissions by Activity – Base Year of 2008**

Emission-Generating Activity	VOC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	HAPs
Livestock Grazing	0	0	0	0	0	0	0
Recreation	16	41	1	142	14	0	2
Travel and Transportation Management	0	0	0	0	0	0	0
Total	16	41	1	142	15	0	2

**Table 3.38. Estimated GHG Pollutant Emissions by Activity – Base Year of 2008**

Emission-Generating Activity	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e	CO <sub>2</sub> e (Tonnes)
Livestock Grazing	19	737	0	15,497	14,063
Recreation	222	0	0	230	209

Emission-Generating Activity	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e	CO <sub>2</sub> e (Tonnes)
Travel and Transportation Management	2	0	0	2	1
Total	243	737	0	15,729	14,273

## Prevention of Significant Deterioration

In order to prevent areas from deteriorating up to the level of the NAAQS, the Clean Air Act lays out provisions for Prevention of Significant Deterioration. The Act's classification system was established that identifies the amount of additional air quality degradation (increments) allowed above legally established baseline levels. Prevention of Significant Deterioration Class I areas have the greatest limitations, with little additional degradation allowed.

Mandatory Federal Prevention of Significant Deterioration Class I areas (primarily consisting of large national parks and wilderness areas) were identified when the Clean Air Act was August 7, 1977 and cannot be redesignated as another class. Remaining areas in the nation (outside nonattainment and maintenance areas) are designated as Prevention of Significant Deterioration Class II areas, where moderate deterioration and controlled growth are allowed. The Dominguez Canyon Wilderness Area, inside D-E NCA, is classified as a Class II airshed by the EPA. Class II calls for somewhat less stringent protection from air pollution than a Class I area.

As air quality improves or degrades, the Clean Air Act allows for area classifications to rise or fall (with the exception of Class I areas). In addition to establishing Prevention of Significant Deterioration increments, the U.S. Congress established the National Visibility Goal of "the prevention of any future, and the remedying of any existing impairment of visibility, in mandatory class I areas where impairment results from manmade air pollution." Prevention of Significant Deterioration Class I areas in and around the planning area (and their approximate distance from D-E NCA) include the following:

- Black Canyon of the Gunnison Wilderness Area (25 miles)
- Maroon Bells - Snowmass Wilderness Area (62 miles)
- West Elk Wilderness Area (40 miles)
- La Garita Wilderness Area (85 miles)
- Weminuche Wilderness Area (70 miles)
- Mesa Verde National Park (85 miles)

Under Colorado law, the following Federal Prevention of Significant Deterioration Class II areas (with boundaries as of August 7, 1977) in and around the planning area are subject to the same annual, 24-hour, and 3-hour sulfur dioxide increments as those for the Federal Prevention of Significant Deterioration Class I areas listed above:

- Black Canyon of the Gunnison National Park (excluding the Prevention of Significant Deterioration Class I Wilderness Area)
- Gunnison Gorge National Conservation Area (boundary as of October 27, 1977)



- Colorado National Monument
- Uncompahgre Mountain Primitive Area
- Wilson Mountain Primitive Area

## **Climate**

Climate represents the long-term statistics of daily, seasonal, and annual weather conditions of a particular region throughout the year, averaged over a series of years (typically 30 years). Climate is both a driving force and a limiting factor for biological, ecological, and hydrologic processes, as well as for resource management activities such as disturbed site reclamation, wildland fire management, drought management, rangeland and watershed management, and wildlife habitat administration. Climate also influences renewable and non-renewable resource management, affecting the productivity and success of many BLM activities. Incorporating effective application of climate information into BLM programs, projects, activities and decisions authorizing use of the public lands is critical for effective management. Climate data include information such as trends in precipitation, temperature, wind speed, cloud cover, relative humidity, and solar radiation.

The planning area is located in a high plateau continental region of mesas, mountains, and high desert. The climate is characterized by dry, sunny days and clear nights with extreme daily temperature changes. Throughout much of the planning area, average daily winter temperatures range from a low of around 19 °F to a high of nearly 40 °F. In summer, average daily temperatures range from around 55 °F up to the low 90s. Higher, surrounding elevation locations are cooler, with extreme minimum temperatures approaching -40 °F, with extreme maximum temperatures near 100 °F.

Monthly precipitation is relatively uniform, with minimum precipitation typically occurring during June, followed by a period of maximum precipitation caused by summer thunderstorms. Higher elevation monthly precipitation is more uniform but contains less moisture in midwinter snow. Snowfall typically occurs from November through April (and October through May at higher elevations), with light accumulation.

As determined by the Grand Junction Airport Weather Station, the regional prevailing wind direction is from the east and east-southeast. Wind speed is typically highest during spring but averages only 7.5 miles per hour annually. Winds are typically influenced by terrain features – up slope during the day and down slope at night.

## **Climate Change**

The temperature of Earth's atmosphere is regulated by a balance of radiation received from the sun, minus the amount of that radiation absorbed by the planet and the amount of that radiation that is reflected back outside the atmosphere. In the atmosphere, greenhouse gases keep the temperature of Earth warmer than it would be otherwise, and allow the planet to sustain life. Although these gases and particles have occurred naturally for millennia, there has been an increase in their atmospheric concentration since the start of the industrial age, contributing to observed climate variability beyond the historic norm. Anthropogenic (or human-caused) emissions include greenhouse (GHG) emissions from electric power generation, industrial processes, transportation technology, urban development, agricultural practices, and other human activity.

According to the Intergovernmental Panel on Climate Change (IPCC) fifth assessment synthesis report (Pachauri et al. 2014), anthropogenic greenhouse gas (GHG) emissions have increased since the pre-industrial era, largely driven by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane, and nitrous oxide that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to be the dominant cause of the observed warming since the mid-20th century.

The report shows that total anthropogenic GHG emissions continued to increase from 1970 to 2010 with larger absolute increases between 2000 and 2010, despite a growing number of climate change mitigation policies. Emissions of carbon dioxide (CO<sub>2</sub>) from fossil fuel combustion and industrial processes contributed about 78 percent of the total increase in GHG emissions from 1970 to 2010, with a similar percentage contribution for the increase during the period 2000–2010.

The IPCC assessment report says that each of the last three decades were successively warmer at the Earth's surface than any preceding decade since 1850. The period from 1983 to 2012 was likely the warmest 30-year period of the last 1,400 years in the Northern Hemisphere. According to the report, ocean warming accounts for the greatest increase in energy stored in the climate system, representing more than 90 percent of the energy accumulated between 1971 and 2010, while only about 1 percent is stored in the atmosphere.

Pachauri et al. (2014) also describe changes in other monitored phenomena: Precipitation has increased since 1901 (averaged over the mid-latitude land areas of the Northern Hemisphere); the Greenland and Antarctic ice sheets lost mass for the period 1992 to 2011, likely at a larger rate over years 2002 to 2011; and glaciers continue to shrink almost worldwide. The IPCC report also states that changes in many extreme weather and climate events have been seen since about 1950. Some of these changes have been linked to human influences, including a decrease in cold temperature extremes, an increase in warm temperature extremes, an increase in extremely high sea levels, and an increase in the number of heavy precipitation events in a number of regions.

Pachauri et al. (2014) conclude that cumulative emissions of CO<sub>2</sub> will largely determine global mean surface warming by the late 21st century and beyond. Projections of GHG emissions vary over a wide range, depending on both socioeconomic development and climate policy. Future climate will depend on warming caused by past anthropogenic emissions as well as future anthropogenic emissions and natural climate variability. The report assesses future climate for four modeled emission scenarios, and it projects that the global mean surface temperature change for the period 2016–2035 relative to 1986–2005 will be similar for the four modeled future emission scenarios and will likely be in the range 0.3–0.7 °C. Relative to the years 1850–1900, global surface temperature change for the end of the 21st century (2081–2100) is projected to likely exceed 1.5 °C for the highest three emission scenarios and is not likely to exceed 2 °C for the low-emission scenario.

The report goes on to say that it is virtually certain that there will be more frequent daily and seasonal hot-temperature extremes and fewer cold-temperature extremes over most land areas as global mean surface temperature increases. It is very likely that heat waves will occur with a higher frequency and last longer. Occasional cold winter extremes will continue to occur. Changes in precipitation will not be uniform. The high latitudes and the equatorial Pacific are likely to experience an increase in annual mean precipitation under the high-emission scenario. In many mid-latitude and subtropical dry regions, mean precipitation likely will likely decrease overall, while in many mid-latitude wet regions, mean precipitation will likely increase under the

high-emission scenario. Extreme precipitation events over most of the mid-latitude land masses and over wet tropical regions will very likely become more intense and more frequent.

Pachauri et al. (2014) discuss mitigation pathways and project that without additional efforts to reduce GHG emissions beyond those in place today, global emissions will increase, driven by growth in global population and economic activities. Projections for global mean surface temperature increases in 2100 in baseline scenarios—those without additional mitigation—range from 3.7 to 4.8 °C above the average for 1850-1900 for a median climate response.

The report says there are multiple mitigation pathways that are likely to limit warming to below 2 °C relative to pre-industrial levels. These pathways would require substantial emission reductions over the next few decades (40–70 percent global anthropogenic GHG-emission reductions by 2050 compared to 2010) and near zero emissions of CO<sub>2</sub> and other long-lived GHGs by the end of the century (year 2100). Implementing such reductions poses substantial technological, economic, social, and institutional challenges, which increase when there are delays in additional mitigation or when key technologies are not available. Limiting warming to lower or higher levels involves similar challenges, but on different time scales.

According to a report completed for the CWCB (Ray et al. 2008), temperatures in Colorado increased by approximately 2 °F between 1977 and 2006. As reported in the 2007 Colorado Climate Action Plan developed by the State of Colorado (Ritter 2007), climate change effects within Colorado included the following:

- Shorter and warmer winters with a thinner snow pack and earlier spring runoff
- Less precipitation overall with more falling as rain
- Longer periods of drought
- More and larger wildfires
- Widespread beetle infestations
- Rapid spread of West Nile virus due to higher summer temperatures

As mentioned before, climate models cannot predict with accuracy how future projections may look; however, they are refined and down-scaled as science and technology improves. At present, most existing climate prediction models are not at a scale sufficient to estimate potential impacts of climate change within the analysis area. That said, Ray et al. (2008) did include projections of some potential future variations.

In relation to a 1950–1999 baseline, climate models project that Colorado will warm 2.5 °F by 2025 and 4 °F by 2050. The 2050 projection indicates that summers will warm by 5 °F and winters by 3 °F (Ray et al. 2008). Future potential predicted climate change impacts on Colorado include the following (Ray et al. 2008):

- More frequent and longer lasting heat extremes that stress electrical utility demands
- Longer and more intense wildfire seasons
- Midwinter thawing and earlier melting of snow pack
- Lower river flows in summer months

- Water shortages for irrigated agriculture
- Slower recharge of groundwater aquifers
- Migration of plant and animal species to higher elevations
- More insect infestation in forests

### **3.3. Resource Uses**

#### **3.3.1. Recreational Use**

Recreation is one of the most highly valued uses of the D-E NCA, and it was identified in the Omnibus Act as a purpose of the designation of the D-E NCA. Visitors to the D-E NCA find a variety of recreational opportunities where they can participate in different activities in a variety of recreational settings.

The BLM separates its inventory of recreational resources by supply and demand. On the supply side, the BLM looks at the current recreation setting characteristics (RSCs) and the regional recreational opportunities provided by other outdoor recreation service providers (both private and public). On the demand side, the BLM looks at which participants and communities are demanding recreational opportunities; in which activities the participants are engaging; which communities are affected; what partnerships exist; and what outcome preferences participants and communities have. Combined, the supply of and the demand for recreational opportunities in the D-E NCA constitutes the current conditions of recreation.

The information the BLM used to describe the supply and demand of recreation in the D-E NCA included, but was not limited to, the following:

- Electronic road and trail counters
- Recreation patrol observations
- Special recreation permit post-use reports
- GIS data
- Visitor preference surveys and focus groups designed by the Natural Resource and Land Policy Institute at Colorado Mesa University
- The Colorado Statewide Comprehensive Outdoor Recreation Plan (SCORP)
- The BLM Recreation Management Information System (RMIS)
- Public scoping as part of the development of this RMP

As part of this planning effort, the D-E NCA was separated into management zones to facilitate public discussion about recreation issues. This discussion will use those zones (Map 3–28) as an organizational tool.

## Management Zone Descriptions

**Zone 1:** Map 3–28, Hunting Ground -- area between the Gunnison River and Hwy 50, 17,671 acres of BLM land

The BLM does not have road/trail counters in this zone. As a result, the level of use is not clear. Patrol observations report numerous dispersed campsites, large fire rings, and evidence of target shooting. Results from the on-site survey showed hiking and horseback riding as the most satisfying activities. Recreation patrols and scoping comments suggest the zone is also valued for OHV riding and jeeping activities. The Old Spanish National Historic Trail runs through Zone 1. There is an information kiosk outside the D-E NCA in the UFO with information about the trail near Wells Gulch. There is no infrastructure related to the trail inside the D-E NCA. Private inholdings within the zone cover 55 acres. Visitor survey information may not have accurately captured all the activities in this zone.

**Zone 2:** Map 3–28, the Gunnison River Corridor, 12,272 acres of BLM land

The Gunnison River is valued for recreation opportunities involving river boating activities (primarily canoeing). The primary use season occurs between Memorial Day and Labor Day. The BLM estimates total river use around 4,000 visitor days, on the basis of reported commercial use numbers. The BLM does not currently require permits for private boaters. As a result, the BLM estimates private use as a percentage of commercial use. The BLM's estimate for private v. commercial use on the river is 60 percent commercial and 40 percent private. The most popular use pattern noted from recreation patrols is an overnight trip that launches at Escalante Creek and takes out at Whitewater. As a result, there is competition for, and congestion at, the popular campsites along the river. The most intense congestion occurs along the bench, just below the mouth of Dominguez Canyon. This is where visitors like to combine a hike up Dominguez Canyon with their river trip. Though not as popular as overnight trips, day trips are common. Visitors either launch from Escalante Creek and take out at Bridgeport, or launch from Bridgeport and take out at Whitewater. The river above Escalante Creek is the least used section. Trips that use this section launch from Confluence Park in Delta and take out at either Escalante, Bridgeport or Whitewater.

The Whitewater launch site is managed cooperatively by Mesa County and the BLM. Mesa County owns the land, and the BLM manages the site. The Union Pacific Railroad runs along the east side of the river through the entire zone. As a result, all river traffic must cross the railroad tracks to access the river. The tracks are far enough from the river at the Escalante put-in that boaters can drive close to the river bank to launch boats. At Bridgeport and Whitewater, boaters have to carry gear under a trestle to reach the river. The proximity of the boaters to the railroad track is one of the most significant management issues in the zone. The BLM and the railroad have been engaged in an effort to resolve these issues. Hunting and recreational gold panning are also popular in this zone.

Private land within this zone is 3,560 acres (mostly agriculture) and CPW land manages 359 acres.

New information provided during the comment period for the Draft RMP noted railroad timbers with exposed spikes along the river. The extent of the threat to water quality from the treated timbers is unknown. The spikes in the timbers could cause a safety hazard to river boats.

**Zone 3:** Map 3–28, Ninemile Hill, Cactus Park, Farmers Canyon, Gunnison Bluffs, Dominguez Campground, 39,631 acres of BLM land

As a result of its proximity to the Grand Valley, this zone is valued for its close-to-home recreation opportunities. This zone provides a variety of recreation opportunities associated with both motorized and non-motorized recreation. Bouldering and multipitch climbing occur along East Creek and Hwy 141. Bouldering usually occurs on the sandstone blocks along lower East Creek and multi-pitch climbs occur further up East Creek in Unaweep Canyon. Colorado Highway 141, which forms the northern boundary of the D-E NCA, is designated as the Unaweep-Tabeguache Scenic Byway, which offers scenic touring opportunities.

Ninemile Hill, Cactus Park and Farmers Canyon are used primarily for OHV trail-riding recreation. Cactus Park in particular is a popular staging area for OHV riders. OHV riders and jeeps use the area primarily fall, winter, and spring. The light snow cover in the winter leaves the area accessible when other areas in the region inaccessible to these types of recreation. As a result, OHV use occurs when routes are dry, wet, and frozen. Not all users use routes when they are wet, but some do, especially during hunting season when the weather changes.

Hikers, equestrians, and mountain bikers also use this zone. Hikers and equestrians commonly use the two-track routes within the zone for trail-based outings, or they use the zone to access the Dominguez Canyon Wilderness. The Tabeguache Trail, which crosses the zone, is popular for long-distance, point-to-point mountain bike riding. Dispersed camping occurs throughout the zone, with the heaviest concentration in Cactus Park and, during big game hunting season, along the Dominguez Road. Recreation in the western part of the zone is closely connected to recreation on the adjoining National Forest lands. OHV trail-riders move across the administrative boundary from USFS managed trails to the multiple two-track routes on BLM lands. During big game hunting season, hunters often camp on BLM-administered lands and hunt on adjacent forest lands. Visitors also value this zone, especially Cactus Park for wildlife viewing.

The BLM estimates close to 50,000 visitors use this zone annually, on the basis of counters and patrol estimates. That's approximately half of all current recreation use in the D-E NCA. The BLM maintains a partnership with the Unaweep-Tabeguache Scenic Byway Association to actively manage byway resources. The BLM also maintains a partnership with the Colorado Plateau Mountain Bike Association to maintain signage along the Tabeguache Trail.

#### **Zone 4:** Map 3–28, Dominguez Canyon Wilderness, 66,193 acres of BLM land

A wide variety of non-motorized, non-mechanized quiet-use recreation opportunities occur in the Dominguez Canyon Wilderness. Activities associated with these opportunities include viewing scenery, hiking, horseback riding, wildlife viewing, heritage tourism, and backpacking. There are five primary recreation access points to the Wilderness (Cactus Park, Dominguez Campground/Trailhead, the Gunnison Pack Trail, the McCarty Trailhead, and the mouth of Dominguez Canyon). The BLM estimates 11,000 to 12,000 visitors annually in the Wilderness. Approximately 9,000 of those visits access the Wilderness at the mouth of Dominguez Canyon. As a result, the lower end of Big Dominguez Canyon receives the vast majority of the recreation use in the zone. Several factors contribute to the concentrated use at the mouth of the canyon, including the scenery, cultural resources and easy access. In 2005, the BLM built a pedestrian/equestrian bridge over the Gunnison River to resolve trespass issues with a private bridge. The enhanced access from the bridge combined with the river traffic (see Zone 2 above), has resulted in increased visitation to the lower canyon. Currently, access to the bridge from the Bridgeport Trailhead goes along the Union Pacific Railroad tracks. In an effort to improve visitor safety and work cooperatively with the Union Pacific Railroad, the BLM has approved an alternative trail from the parking area to the bridge.

Impacts from recreation in the lower canyon have been monitored since 2005 with a series of photo points. The photos indicate some minor, incremental erosion on some trails. CPW inholdings within this zone total 638 acres.

Along with the float-boating activities, there is a limited amount of motorized use along the river. Primarily, jet boats are used during the waterfowl season. Occasionally jet boats use the river during the spring and summer for day outings. Since river access is limited for trailer use, most jet boat traffic begins and ends on private property along the river.

**Zone 5:** Map 3–28, Escalante Canyon, mesas south of Escalante Canyon to D-E NCA boundary, and ridges southwest of Dominguez Canyon Wilderness, Wagon Park, 73,800 acres of BLM land

Recreation opportunities in Zone 5 are associated with heritage and scenic touring in Escalante Canyon, big game hunting, OHV riding, jeeping, picnicking, swimming, and kayaking. Much of Escalante Canyon is privately owned, with little public access off the main county-maintained road. The primary recreation activity in the lower part of the canyon is scenic touring. Above the confluence with the Dry Fork of Escalante Creek, there are two stone cabin structures on CPW lands. Both structures provide visitors opportunities for heritage experiences. The BLM has partnered with CPW at one site (Captain Smith's Cabin) to build a picnic area to accommodate visitors.

The Potholes of Escalante Canyon attract day-use visitors for picnicking and swimming. During spring runoff, kayakers are attracted to the Potholes to run the Class IV rapids. Due to the lack of road/trail counters in the area, recreation on the mesas south of Escalante Canyon is not well documented. Recreation patrol observations suggest the area is used primarily by OHV riders on the numerous two-track routes. In the higher elevations, big game hunting is the primary activity. The area north of Escalante Creek, southwest of the Wilderness, is highly valued and most heavily used during big game hunting season. Wagon Park is lightly visited in the summer, but it is also an attractive elk hunting area during the fall.

Private inholdings within this zone total 3,084 acres. Colorado Park and Wildlife inholdings total 968 acres.

The area south of Escalante Canyon (Dry Mesa, Sawmill Mesa, Cactus Park) is used primarily by visitors from Delta and Montrose Counties. Popular activities include OHV riding, jeeping, big game hunting, and camping. There are two remote canyons in the area (Cottonwood and Dry Fork) with little visitation where visitors enjoy backcountry outings. Cottonwood Canyon does not have full-sized vehicle routes in the bottom and canyon, and there is a primitive ATV trail in the bottom of the Dry Fork Canyon. There is also recreational prospecting within this zone.

## Recreation Setting Characteristics

The quality and desirability of recreation opportunities are directly related to the settings in which outdoor recreation participation occurs. Recreation planning assumes the outcomes of recreation are related to these settings; i.e., outcomes can vary as a result of changing RSCs. As such, the available supply of the types of settings is necessary for informed planning decisions.

The BLM defines RSCs as the qualities of the landscape in which recreation activities occur. They describe the natural qualities of the landscape (*physical*), the qualities associated with patterns and levels of use (*social*), and the qualities created through management actions (*operational*). Each setting is further defined by three different attributes:

- Physical setting is defined by 1) remoteness (how far a visitor is from a route), 2) naturalness (what level of contrast exists between human development and the natural landscape), and 3) visitor facilities (how much development exists to support recreation opportunities).
- Social setting is defined by 1) contacts (the number of contacts with other groups), 2) group size (the size of other groups), and 3) evidence of use (the amount of evidence in an area of other visitors, including physical impacts and the sights and sounds of others).
- Operational setting is defined by 1) access (the management allocation for types of travel), 2) visitor services (the amount of on-site information and agency presence), and 3) management controls (the types and amount of restrictions placed on recreation visitors).

Each of these attributes is classified on a continuum from primitive to urban using different indicators (Table 3.39).

The remoteness attribute in the physical setting and the access attribute in the operational setting can both be mapped. The remoteness attribute was mapped using the route inventory that was completed for the planning process (Map 3–29). The access attribute was mapped using the current travel management area designations for the Grand Junction Field Office and Uncompahgre Field Office RMPs (Map 3–30).



**Table 3.39. D-E NCA Recreation Setting Characteristics Matrix**

	Primitive	Back Country	Middle Country	Front Country	Rural	Urban
<b>Physical—Qualities of the Landscape</b>						
Remoteness (Approximate Distance from Routes)	More than ½ mile from any kind of a man-made trail	More than ½ mile from any kind of a man-made ATV or full-sized vehicle route	More than ½ mile from improved gravel roads	More than ½ mile from paved roads and railroad tracks.	More than ½ mile from municipal streets or roads within towns or cities.	Municipal street and roads within towns or cities.
Naturalness (Modifications to the Landscape)	Undisturbed natural landscape.	Natural landscape with any modifications in harmony with surroundings and not visually obvious or evident (e.g., stock ponds, trails).	Character of the natural landscape retained. A few modifications contrast with character of the landscape (e.g., fences, primitive roads).	Character of the natural landscape partially modified but none overpower natural landscape (e.g., roads, structures, utilities).	Character of the natural landscape considerably modified (agriculture, residential or industrial).	Urbanized developments dominate landscape.
Visitor Facilities	No structures. Foot/horse trails only.	Developed trails made mostly of native materials such as log bridges. Structures are rare and isolated.	Maintained and marked trails, simple trailhead developments and basic toilets.	Rustic facilities such as campsites, restrooms, trailheads, and interpretive displays.	Modern facilities such as campgrounds, group shelters, boat launches, and occasional exhibits.	Elaborate full-service facilities such as laundry, restaurants, and groceries.
<b>Social—Qualities Associated with Use</b>						
Contacts (Average with Any Other Group)	Fewer than 3 encounters/day at camp sites and fewer than 6 encounters/day on travel routes.	3-6 encounters/day off travel routes (e.g., campsites) and 7-15 encounters/day on travel routes.	7-14 encounters/day off travel routes (e.g., staging areas) and 15-29 encounters/day en route	15-29 encounters/ day off travel routes (e.g., campgrounds) and 30 or more encounters/day in route.	People seem to be generally everywhere.	Busy place with other people constantly in view.
Group Size (Average—Other than Your Own)	Fewer than or equal to 3 people per group.	4-6 people per group.	7-12 people per group	13-25 people per group.	26-50 people per group.	Greater than 50 people per group.

	<b>Primitive</b>	<b>Back Country</b>	<b>Middle Country</b>	<b>Front Country</b>	<b>Rural</b>	<b>Urban</b>
Evidence of Use	No alteration of the natural terrain. Footprints only observed. Sounds of people rare.	Areas of alteration uncommon. Little surface vegetation wear observed. Sounds of people infrequent.	Small areas of alteration. Surface vegetation showing wear with some bare soils. Sounds of people occasionally heard.	Small areas of alteration prevalent. Surface vegetation gone with compacted soils observed. Sounds of people regularly heard.	A few large areas of alteration. Surface vegetation absent with hardened soils. Sounds of people frequently heard.	Large areas of alteration prevalent. Some erosion. Constantly hear people.
<b>Operational—Conditions Created by Management and Controls over Recreation Use</b>						
Access (types of travel allowed)	All travel is restricted to foot and horse travel.	Mountain bikes and perhaps other mechanized use, but all is non-motorized.	Four-wheel-drive vehicles, ATVs, dirt bikes, or snowmobiles in addition to non-motorized, mechanized use.	Two-wheel drive vehicles predominantly, but also four-wheel-drive vehicles and non-motorized, mechanized use.	Ordinary highway auto and truck traffic is characteristic.	Wide variety of street vehicles and highway traffic is ever-present.
Visitor Services (and info)	None is available. Staff rarely present.	Basic maps, staff infrequently present (e.g., seasonally, high use periods) to provide on-site assistance	Area brochures and maps, staff occasionally (e.g., most weekends) present to provide on-site assistance.	Information materials describe recreation areas and activities, staff periodically present (e.g., weekdays and weekends).	Information described to the left, plus experience and benefit descriptions, staff regularly present (i.e., almost daily).	Information described to the left, plus regularly scheduled on-site outdoor demonstrations and clinics.
Management Controls	No visitor regulations or ethics signing on-site. No use restrictions.	Basic user regulations at key access points. Minimum use restrictions	Some regulatory and ethics signing. Moderate use restrictions. (e.g., camping, human waste).	Rules, regulations and ethics clearly posted. Use restrictions, limitations and/or closures.	Regulations strict and ethics prominent. Use may be limited by permit, reservation, etc.	Enforcement in addition to rules to reduce conflicts, hazards, and resource damage.
<i>Source: CMU 2011</i>						

## Current Setting Conditions

The existing recreation setting characteristics for each of the different zones are summarized below in five tables, corresponding to Zones 1 through 5, showing each attribute along the continuum, and in the narratives that follow each table, which discuss the rationale behind each classification.

### Zone 1: Hunting Ground

Characteristic	Primitive	Back Country	Middle Country	Front Country	Rural	Urban
<b>PHYSICAL SETTINGS</b>						
Remoteness	See remoteness attribute map (Map 3–29)					
Naturalness		X	X			
Visitor Facilities		X				
<b>SOCIAL SETTINGS</b>						
Contacts	Insufficient information					
Group Size	Insufficient information					
Evidence of Use		X	X			
<b>OPERATIONAL SETTINGS</b>						
Access	See access attribute map (Map 3–30)					
Visitor Services	X					
Management Controls	X					
<i>X = Current Settings</i>						

The naturalness attribute in Zone 1 is classified as Back Country–Middle Country. There are range improvements in the zone, including catchments, ponds and fences. None of the improvements significantly contrast with the surrounding landscape. There are numerous routes in the zone. Combined, the routes create a moderate level of contrast with the landscape. However, the character of the landscape has been retained.

The visitor facilities attribute in the zone is classified as Back Country. There are few signs in the zone, no information kiosks, and no developed facilities (parking areas, toilets, etc.). All the routes, with the exception of county-maintained roads, were created to provide access for other resource programs or were user-created.

The BLM has little information about the number of visitors in the zone. As a result, both the social attributes of contacts and group size is unknown. Recreation patrols suggest both can be described as Back Country.

Evidence of use in the zone is somewhere between Back Country and Middle Country. There are few visitors in the area, so the sounds of people are seldom heard; however there may be as many as 20 dispersed campsites with fire rings and parking areas. Evidence of target shooting, off-route vehicle travel, and trash dumping are associated with these numerous campsites.

The visitor services and management controls in the zone are classified as Primitive. There are no maps available for the zone and recreation patrols are rare. Other than the travel restriction of limiting travel to existing road and trails, there are no specific recreation restrictions on use.

### Zone 2: Gunnison River

Characteristic	Primitive	Back Country	Middle Country	Front Country	Rural	Urban
<b>PHYSICAL SETTINGS</b>						
Remoteness	See remoteness attribute map (Map 3–29)					

Characteristic	Primitive	Back Country	Middle Country	Front Country	Rural	Urban
Naturalness				X	X	
Visitor Facilities			X			
<b>SOCIAL SETTINGS</b>						
Contacts		X	X			
Group Size			X	X		
Evidence of Use			X	X		
<b>OPERATIONAL SETTINGS</b>						
Access	See access attribute map (Map 3–30)					
Visitor Services				X		
Management Controls			X			
<i>X = Current Settings</i>						

The naturalness in the zone is classified between Front Country and Rural. The railroad is adjacent to the river through the entire zone. There are numerous private parcels along the river with buildings, utility lines and agricultural development. Two county-maintained roads connect the zone to Highway 50. Combined, these developments create a moderate contrast with the natural landscape.

The visitor facilities attribute in the zone is classified as Middle Country. The BLM provides portable toilets at Escalante Creek during the boating season, and there is a parking area and toilet at Bridgeport. The county access at Whitewater has a concrete vault toilet. The boat ramps at Escalante, Bridgeport and Whitewater are all natural surface. There are kiosks and bulletin boards at the river access points with visitor information.

The contact attribute is either Back Country or Middle Country for the zone. On weekdays, the setting is Back Country. During weekends the setting changes to Middle Country. The exception is the setting around the mouth of Dominguez Canyon. As stated above, the combination of walk-in traffic across the Bridgeport Bridge and the concentration of camping creates a very congested social setting at the mouth of the canyon. During busy weekends, the contact setting attribute could reach rural setting levels.

Generally, the group size attribute ranges between Middle Country to Front Country. Like the contact attribute, there is a difference between weekday use and weekend use. There are generally smaller groups during the week and larger groups on the weekend.

The evidence of use attribute ranges between Middle Country and Front Country. Generally, a visitor will notice evidence of other visitors at the campsites along the river. Most campsites have hardened surfaces. With the exception of the campsites near the mouth of Dominguez Canyon, campsites are separated enough that visitors do not hear the sounds of other campers. The campsites near the mouth of Dominguez Canyon are close enough that other visitors could be heard.

The visitor service attribute is classified as Front Country during the boating season. There are kiosks at the river access points that provide visitors basic information about the river and the visitor use restrictions. The BLM conducts regular recreation patrols throughout the boating season, including a weekly patrol to the mouth of Dominguez Canyon.

The management control attribute is classified as Middle Country. There is a group size limit for commercial outfitters. Permits administered out of the GJFO limit commercial trips to 25 plus guides, and permits issued out of the UFO limit commercial trips to 25, including guides. (This

inconsistency will be address through this process). Commercial permits also limit the number of groups a company can have camped at the mouth of Dominguez Canyon to two per night. Private boaters are required to carry and use portable toilet systems and fire pans to pack out solid human waste and fire ash. In response to complaints about negative boater behavior, the UFO published supplementary rules for conduct at the Escalante put-in.

At the Escalante Put-In it is unlawful to:

- Overnight camp
- Cut live or dead trees
- Collect firewood
- Burn wood fires
- Discharge firearms, including target shooting/paintball weapons
- Fail to keep the site free of all litter, trash, and debris during occupancy of the site and failure to remove all personal equipment and clean the site before departure.

**Zone 3:** Cactus Park; Ninemile Hill; Farmers Canyon; Gunnison Slopes

Characteristic	Primitive	Back Country	Middle Country	Front Country	Rural	Urban
<b>PHYSICAL SETTINGS</b>						
Remoteness	See Remoteness Attribute Map (Map 3–29)					
Naturalness	X		X	X		
Visitor Facilities			X			
<b>SOCIAL SETTINGS</b>						
Contacts		X	X			
Group Size		X				
Evidence of Use	X		X			
<b>OPERATIONAL SETTINGS</b>						
Access	See Access Attribute Map (Map 3–30)					
Visitor Services		X				
Management Controls		X				
<i>X = Current Settings</i>						

The naturalness attribute varies across the zone. Ninemile Hill and Cactus Park are classified as Front Country due to the high concentration of routes, the proximity to Hwy 141, private property development, and the communication facility at the top of Ninemile Hill. Combined, these create a partially modified landscape. The Gunnison Slopes area between Cactus Park and the Gunnison River is classified as Primitive. The landscape in this area is generally undisturbed. The area west of Cactus Park extending to the forest boundary is classified as Middle Country. There are numerous routes, range improvements and vegetation manipulations (chaining and rollerchopping) that create limited contrast with the natural landscape. Overall, these contrasts are minor.

Similarly to naturalness, there is a wide variety in the visitor facilities in the zone. Overall, the zone is classified as Middle Country. The BLM recently constructed vault toilets at two locations in Cactus Park. Both sites include parking areas. The Dominguez Campground is within this zone. The campground provides vault toilets, picnic tables, fire rings, and parking areas. There are signs throughout the zone that provide limited guidance to visitors.

On the basis of responses to survey questions, the contact attribute for the zone is classified as Backcountry to Middle Country.

On the basis of responses to survey questions, the group size attribute for the zone is classified as Backcountry (average of 3.1 people per group).

Similarly to the naturalness attribute, the evidence of use attribute varies across the zone. Those areas with more use (Cactus Park, Ninemile Hill, and Farmers Canyon) are classified as Middle Country. Since most visitors to these areas are participating in OHV riding, other visitors can be heard. There are numerous dispersed camp sites in these areas. Evidence of target shooting, off-route vehicle travel, and trash are associated with these campsites. In other areas of the zone like the Gunnison Slopes, there is little or no evidence of use. This area of the zone is classified as primitive.

The visitor services attribute is classified as Back Country. There is basic information available in Cactus Park and at the Dominguez Campground. There are directional signs to help visitors traveling through the zone, signs indicating the Dominguez Canyon Wilderness Boundary, and signs delineating the Tabeguache Trail. Recreation patrols are infrequent.

The management control attribute for the zone is classified as Back Country. The travel management restriction of limited to existing roads and trails is posted at the major access points. The exception to the Back Country classification is at the Dominguez Campground where the following developed recreation site restrictions apply:

In accordance with 43 CFR 8365, it is unlawful to do the following:

- Use water supply facilities for cleaning fish, game, or other materials.
- Deposit human waste except in toilet or sewage facilities.
- Operate audio device, or other noise producing device or motorized equipment in a manner that makes unreasonable noise.
- Operate or use a public address system
- Construct or use an antenna or aerial (other than on a vehicle or as an integral part of such equipment)
- Build fire except in a stove, grill, fireplace or ring provided for such use
- Enter or remain in campgrounds at night when not occupant or visitor
- Enter or use a site or a portion of a site closed to public use.
- Occupy a site with more persons than permitted.
- Move any table, stove, barrier, litter receptacle or other campground equipment.
- Discharge fireworks or Firearms or weapons
- To have unattended property in day use area for more than 24 hours, or for more than 72 hours in other areas.
- To operate vehicle in portions of recreation sites closed to such use.

- To have animals in swimming area (except Seeing Eye dog or Service dog)
- Animals must be under restrictive control
- Camping equipment only in designated campsite in designated place. (pitch any tent, park any trailer, erect any shelter)

#### Zone 4: Dominguez Canyon Wilderness

Characteristic	Primitive	Back Country	Middle Country	Front Country	Rural	Urban
<b>PHYSICAL SETTINGS</b>						
Remoteness	See remoteness attribute map (Map 3–29)					
Naturalness	X	X				
Visitor Facilities	X					
<b>SOCIAL SETTINGS</b>						
Contacts	X		X	X		
Group Size	X		X	X		
Evidence of Use	X	X				
<b>OPERATIONAL SETTINGS</b>						
Access	See access attribute map (Map 3–30)					
Visitor Services	X					
Management Controls				X		
<i>X = Current Settings</i>						

The naturalness attribute is classified as Primitive–Back Country with the exception of the Rambo homestead. There are few modifications within the Dominguez Canyon Wilderness. Modifications include stock ponds fences and trails. All these modifications result in little to no contrast with the natural landscape. The Rambo homestead does create a noticeable contrast with the landscape. The contrast is limited to 5–10 acres.

The visitor facility attribute is classified as Primitive. There are no developments or improvements to the trails inside the Wilderness.

The social setting attributes of number of contacts and groups size vary. In the area between the confluence of the Dry Fork and the mouth of Dominguez Canyon these attributes range from Back Country to Front Country. As noted in the Zone 2 discussion, there is intensive use of the river campsites at the mouth of Dominguez Canyon. Most of the river traffic that camps at the mouth of the canyon also hikes up the lower part of Big Dominguez Creek to see the petroglyphs and the waterfall. Day-use hikers and equestrians use the Bridgeport Bridge to access the lower part of the canyon. Combined, these two groups of users can result in frequent contacts and what seems like large groups. Outside the lower part of the canyon, both the number of contacts and the group size attributes are classified as Primitive.

The evidence of use attribute is classified as Primitive to Back Country. The trail in the lower part of the canyon and the social trails around the petroglyphs and the waterfall are well defined. Outside these areas, there are few signs of human activity.

The visitor services attribute is classified as primitive for the entire zone. All visitor services for the zone are delivered outside the zone. This includes kiosks with maps and information about the Wilderness and a brochure that can be obtained online or at the BLM offices.

The management controls attribute is classified as Front Country. The wilderness is closed to motorized and mechanized use. Rules are clearly posted on the kiosk and in the brochure.

**Zone 5: Escalante Canyon; Sawmill Mesa/Dry Mesa; Wagon Park**

Characteristic	Primitive	Back Country	Middle Country	Front Country	Rural	Urban
<b>PHYSICAL SETTINGS</b>						
Remoteness	See remoteness attribute map (Map 3–29)					
Naturalness		X	X	X	X	
Visitor Facilities	X	X	X			
<b>SOCIAL SETTINGS</b>						
Contacts		X	X			
Group Size		X				
Evidence of Use		X				
<b>OPERATIONAL SETTINGS</b>						
Access	See access attribute map (Map 3–30)					
Visitor Services	X	X				
Management Controls	X	X				
<i>X = Current Settings</i>						

Similarly to Zone 3, the naturalness attribute for this zone varies. The Escalante Canyon corridor is classified as Front Country to Rural due to the agricultural development on private land throughout the canyon. The Wagon Park area and the Sawmill Mesa/Dry Mesa areas are classified as Middle Country. These areas have numerous routes and areas that have been chained or rollerchopped. The areas south and west of the Dominguez Canyon Wilderness in Palmer Gulch and along Camp Ridge, along with Cottonwood Creek, are classified as Back Country. There are routes in these areas; however, the impact to the natural landscape is minor and not evident.

With the exception of the Potholes Recreation Site, the visitor facilities attribute for the zone is Primitive to Back Country. There are a few directional signs, and a few wilderness boundary signs along the Wilderness boundary. Otherwise there are no visitor services. The Potholes Recreation site has visitor information kiosks, picnic tables, a vault toilet and shade structures.

The BLM has little information about the number of visitors in the zone. As a result, both the social attributes of contacts and group size is unknown. Recreation patrols suggest both can be described as Back Country. The exception to this classification is at the Potholes Recreation Site, where use is concentrated and visitors could expect to see more than 5 - 10 other groups on busy weekends.

The evidence of use classification is generally Back Country to Middle Country. There are numerous dispersed campsites where vegetation has been worn away, campfire debris is present and trash has been left.

With the exception of the Potholes Recreation Site, the visitor service attribute is classified as Primitive – Back Country. As mentioned above, there are a few signs to help visitors. Recreation patrols are infrequent in the zone.

With the exception of the Potholes Recreation Site, the management controls attribute is classified as Primitive to Back Country. As mentioned above, there are a few signs to help visitors. Recreation patrols are infrequent in the zone.

With the exception of the Potholes Recreation Site, the management controls attribute is classified as Primitive to Back Country. Motorized travel is limited to existing roads and trails. These rules are posted at a few access points. Around the Potholes Recreation Site and in the Escalante Canyon ACEC around the Potholes site it is unlawful to do the following:



- Camp outside designated campsites
- Cut live or dead trees
- Burn materials containing nails or metal or hardware, etc.
- Fail to keep sites free of all litter, trash, and debris during occupancy of a site and failure to remove all personal equipment and clean site upon departure
- Dive/jump from rocks, shore or any other means into the water
- Discharge firearms of any kind, including those used for target shooting or paintball weapons
- Possess glass container

Specific to the Potholes Recreation Site, it is unlawful to do the following:

- Exhibit public nudity
- Burn wood fires

## **Recreational User Interaction**

In addition to the recreational settings described above, interactions between visitors during an outing can also influence visitor experiences. How visitor experiences are influenced by other visitors can be subjective and varies between individuals. Some user interactions are positive (i.e., visitor experiences are enhanced), and some interactions are negative (i.e., visitor experiences are degraded).

Research on the topic of recreational user interactions has been conducted for more than 30 years. The most commonly used definition of user interaction focuses user conflict. Jacob and Schreyer (1980) defined user conflict as goal interference that can be attributed to other recreational users. Using this definition, negative user interactions (conflict) occur when one visitor's expectation or experience is diminished, and that visitor can attribute the negative impact to another visitor's behavior.

Other definitions of user interactions are broader and include not only negative interactions (conflict), but also positive interactions where interactions with other users enhance visitor experiences (complementary interactions). See Marcouiller, Scott, and Prey (2008).

The research literature suggests visitor perceptions about other users influence whether interactions are complementary or conflicting. Perceptions about a variety of factors (e.g., use of technology, modes of travel, environmental ethics, etc.) influence whether interactions with other visitors have a positive or negative impact on a visitor's experience.

Not only are the results of user interactions complementary, conflicting, or something in between, they can also be asymmetrical. That is, a visitor that interacts with another visitor might see the interaction as complementary, while the other visitor might see the interaction as conflicting. For example, a motorcycle rider that is enjoying a ride at high speeds might encounter a family riding ATVs. The motorcycle rider might enjoy seeing the family out enjoying time together which enhances his/her experience. On the other hand, the family riding ATVs might see the motorcycle traveling at high speeds as a threat to the safety of younger riders. In this case, the motorcycle

rider experiences a complementary user interaction and the ATV family experiences a conflicting user interaction. The bulk of the past studies related to user interactions suggests this asymmetry occurs with many types of user interactions.

“... there is a tendency for one group (mostly traditional and non-motorized users) to perceive more problems than the other group with whom they are in conflict. This other group, which typically holds an asymmetrical view of the level of conflict, is typically composed of nontraditional, mechanized or motorized users. This finding of differential levels of perceived conflict holds for cross-country skiing versus snowmobiling in Minnesota (Knopp and Tyger 1973), for oar-powered versus motor-powered whitewater boating in the Grand Canyon (Shelby 1980), for anglers versus water-skiers on Midwest reservoirs (Gramann and Burdge 1981), for paddling canoeists versus motor boaters in the Boundary Waters Canoe Area (Adelman, Herberlein, and Bronnicksen 1986), and for hikers versus mountain bikers in the Rattlesnake National Recreation Area (Watson, Williams, and Daigle 1991). Ramthun (1995) found that one-third of hikers on a trail near Salt Lake City, Utah, sensed conflict with mountain bikers, while less than 6 percent of bikers perceived conflict. Gibbons and Ruddell (1995) found that helicopter skiers in the Wasatch National Forest in Utah reported no conflict, while non-motorized backcountry users reported high levels of conflict.”

The research also shows visitors adapt when they encounter conflicting situations. (Kuss, Graefe, and Vaske 1990.) They may 1) re-evaluate their perceptions about what is acceptable; 2) change their behavior (visit the area less frequently or visit at different times); or 3) stop using the area.

The BLM considers different recreational uses non-compatible when conflicting user interactions reach a point where visitors choose to stop recreating in an area and decide to find other areas where the conflicting interactions do not occur (displacement).

During public scoping for the planning process, the BLM received comments from the public about the desired future condition of recreation within the planning area. The BLM received comments from the public supporting recreation areas that did not include motorized uses to protect specific types of recreation opportunities. The BLM also received comments to manage recreation for all types of activities (motorized and non-motorized), so the public would have to opportunity to share “multiple-use” trails. The BLM interpreted these comments as 1) an indicator that some user interactions in the planning area are conflicting and 2) there is a desire from the public to develop management that provides recreational opportunities that promotes positive user interactions and reduces conflict.

Based on the literature, the BLM understands complementary user actions are occurring where visitors are participating in similar activities (e.g., ATV riding and jeeping or hiking and backpacking) or where asymmetrical user interactions occur with complementary results for one group of users.

Conversely, the BLM generally assumes conflicting user interactions are likely to occur where activities have a greater degree of difference (e.g., motorcycle riding and hiking), and the BLM assumes some of these interactions are asymmetrical. In the case of a motorcycle rider and a hiker, only the hiker might see the interaction with the motorcycle rider as a conflicting interaction; the hiker may not have any impact on the motorcycle rider.

The BLM also assumes in some parts of the planning area different uses are non-compatible and visitor displacement is occurring.

## Special Recreation Permits

The BLM issues special recreation permits to achieve recreation management objectives, and to make available commercial outfitting and event opportunities to business and organizations. These outfitting and event services are important necessary support services that help recreation participants achieve desired results from recreation outings. As such, SRPs are discussed as part of the recreation supply.

Current commercial SRPs are issued out of both the Grand Junction and Uncompahgre Field Offices and authorize guide services for river trips, big game and mountain lion hunting, waterfowl hunting, mountain bike tours, backpacking, climbing/canyoneering, and kayak instruction.

River trip services (canoeing, rafting, and kayaking) provide the largest amount of commercial services in the D-E NCA. These services include both one day and multi-day trips on the Gunnison River. According to post-use reports submitted by permittees, services are provided on the river to approximately 2,500 visitors annually. There is one outfitter that provides specialized river trip services to disabled clients. Additionally, there is one permit issued that authorizes shuttle and rental services for river users.

Review of all hunting permit files indicates there are minimal hunting services provided in the D-E NCA. Due to a lack of specific information about locations where services are provided, the number of visitors receiving guided hunting services in the D-E NCA is unknown. For example, a hunting outfitter might report use in Game Management Unit (GMU) 62. This use could be anywhere on BLM lands within the GMU, which could be in the UFO, the GJFO or in the D-E NCA. According to post-use reports, several of the hunting outfitters that are authorized to provide services in the D-E NCA, do not provide services in the D-E NCA. Additionally, there are two hunting permits issued by the USFS that authorize use on BLM lands within the D-E NCA. Like the BLM permits, post use information is not specific about locations, so the amount of services provided in the D-E NCA is unknown.

Services for mountain bike tours are associated with a business that provides a series of huts that bikers can use as part of a larger multi-day bike tour. Services in the D-E NCA are limited to guided touring. There are no huts within the D-E NCA. Post-use reports show 185 user days in the D-E NCA.

Services for backpacking, canyoneering, and climbing are very limited, with only seven user days reported in the D-E NCA.

Three event permits are issued to provide visitors opportunities to participate in equestrian and mountain biking events. One equestrian event is a poker ride, and the other event is a horsemanship skill ride with a variety of stations. Combined both events reported 140 user days. There is one small event that provides mountain bike racing opportunities, 24 user days reported.

Currently, no new SRPs are being issued in the D-E NCA, pending completion of this RMP.

## Private Service Providers

Private businesses, other than permitted guide services, in local communities that support outdoor recreation are another important part of the recreation supply. These businesses provide visitors not only with equipment and gear, but also with information about the type and location of opportunities. Within the three-county area (Montrose, Delta, and Mesa Counties), visitors to the D-E NCA can find the necessary equipment, either to purchase or rent, to support their recreation outings. There are both small businesses and larger corporate stores (e.g., REI and Cabela's) that sell the necessary gear and equipment.

## Regional Recreation Supply

Other outdoor recreation providers near the D-E NCA include the BLM, USFS, the National Park Service, and Colorado State Parks. The BLM manages recreation in the Uncompahgre Field Office and the Grand Junction Field Office. Both field offices are currently revising their RMPs. The GJFO currently manages two special recreation management areas (SRMAs), Bangs Canyon and North Fruita Desert. The Bangs Canyon SRMA borders the D-E NCA on the north side of Hwy 141. Both SRMAs provide structured opportunities for trail-based recreation, including nationally recognized mountain bike trail systems. Outside the SRMAs, recreation is managed to provide activity opportunities on the basis of the BLM's multiple use mandate (i.e., recreation is one of the uses on the landscape, and is managed commensurate with other uses). Most of the GJFO lands are within 10 miles of the population of the Grand Valley. As the population increases, demands on the public lands increase. Anecdotally, recreation settings have changed due to both increased recreation use and other public lands uses (energy development, rights-of-way, etc.).

The UFO currently manages two SRMAs, the San Miguel River SRMA and the Dolores River SRMA. Both SRMAs are located on the west slope of the Uncompahgre Plateau. Like the GJFO, the BLM lands in the UFO have experienced pressures as a result of increased populations in the Gunnison and Uncompahgre Valleys. The UFO recently completed the Dry Creek Travel Management Plan, which covers public lands adjacent to the southern boundary of the D-E NCA. The travel management plan restricted motorized and mechanized use to designated roads and trails.

The BLM manages two additional NCAs other than the D-E NCA in western Colorado: McInnis Canyons and Gunnison Gorge. Both protect structured recreational opportunities, primarily around rivers and trails. Like the D-E NCA, both include designated wilderness areas (the Black Ridge Canyons Wilderness is 75,550 acres, and the Gunnison Gorge Wilderness is 62,844 acres.)

Regionally, the USFS provides recreation opportunities on the Grand Mesa and Uncompahgre national forests. The D-E NCA's western boundary is adjacent to the Uncompahgre National Forest. Current recreation management on the UNF is focused on travel management decisions. Access to different areas of the forest for different users shapes the range of recreation opportunities. In areas where routes are closed to motorized use, there are opportunities for quiet use. Through these travel decisions and a strong partnerships with motorized user groups like the Western Slope ATV Association, an extensive motorized trail system has been developed on the north end of the forest, adjacent to Zone 3. The other dominant recreation use on nearby national forest lands is big game hunting. From late August through November, the forest experiences intensive hunting use. Due to the good condition of the Divide Road, the main access road to the forest, many hunters use trailer campers. The result has been a dramatic change over time in the setting. Large camps can have as many as 10 fifth-wheel camp trailers. This use pattern

includes D-E NCA lands along the Dominguez Road, where smaller trailer camps are present throughout the big game hunting seasons.

Within the three-county area of the D-E NCA (Mesa, Montrose, and Delta Counties), recreational target shooting opportunities are generally found on public lands. Areas with restrictions on target shooting include developed recreations sites like campgrounds, areas with high concentrations of visitors, and areas adjacent to urban development. The Grand Junction Field Office manages a developed shooting range north of the city of Grand Junction. Within the two BLM field offices adjacent to the D-E NCA (Uncompahgre and Grand Junction Field Offices) and the two nearby National Conservation Areas (Gunnison Gorge and McInnis Canyons), 2,064,662 acres are available for recreational target shooting on BLM lands within and surrounding the D-E NCA. This represents approximately 90 percent of these BLM lands. In addition, 1,301,784 acres (100 percent) of USFS lands in the Grand Mesa and Uncompahgre National Forests are open to target shooting. In summary, 3,366,446 acres are available on USFS and BLM lands within and surrounding the D-E NCA, which represents 95 percent of these lands.

There are two National Park Service units within an hour's drive of the D-E NCA -- Colorado National Monument and the Black Canyon of the Gunnison National Park. The Colorado National Monument is adjacent to the McInnis Canyons NCA, and the Black Canyon of the Gunnison National Park is adjacent to the Gunnison Gorge NCA. Both units offer traditional recreational opportunities -- hiking, scenic touring, and interpretation. Entrance and camping fees are charged at both areas.

Colorado State Parks manages several parks within an hour's drive of the D-E NCA — Colorado River, Highline Lake, Sweitzer Lake, Crawford, and Ridgway. All these State park units offer developed, structured recreational opportunities for a variety of activities, including, but not limited to, camping, picnicking, fishing, and swimming. Entrances and camping fees are charged at all these State parks.

Combined, these public lands offer residents of local communities outstanding outdoor recreation close to home. In addition to the benefit of living in a community close to these public land opportunities, the recreation on these public lands provide the local community with economic value through tourism and recreation industry dollars. As noted above, the mountain bike trails in the GJFO are nationally known. In addition to the GJFO trails, the MCNCA has nationally known mountain bike trails. The Gunnison River through the GGNCA is nationally known for cold water fishing. Colorado, in general, is nationally known for elk hunting. The two NPS units draw visitors from the national market. To service these public land visitors, both local and national, a recreation service provider sector has emerged in the local communities. Recreational services, including lodging, food, gear, and guide services, can be found in all the local communities.

## **Recreational Demand**

Recreational demand includes not only the types of activities described in the zone summaries above, but also an understanding of what local communities and BLM partners want in terms of recreational management on public lands, who the participants are, and the expectations visitors and communities have about the kinds of experiences and benefits that result from recreational outings.

To better understand the demand for recreation in the D-E NCA, the BLM worked with the Natural Resource and Land Policy Institute (NRLPI) at Colorado Mesa University. The

NRLPI conducted visitor preference surveys and focus groups that gathered information relevant to recreation demand (CMU 2011). The report is available on the D-E NCA website: <http://1.usa.gov/1qKkMVi>. The BLM also conducted scoping meetings, met with cooperating agencies (including cities and counties), and participated in Advisory Council meetings to better understand what recreation management local communities and BLM partners want for the D-E NCA.

Local community demand for recreation in the D-E NCA has two, often competing components. First, communities want public lands recreation management to support economic development by attracting tourism and in-migration of new residents. Local communities have expressed an interest in being the “Gateway” to the D-E NCA, suggesting a destination tourism management approach. New residents attracted to local communities in part by the outdoor recreation opportunities generate economic growth in a variety of ways including but not limited to new construction and new businesses created by new residents or new businesses that provide services to new residents. The second component of what local communities want from public lands recreation management is protection of the traditional recreation uses and use patterns that support existing residents’ quality of life. There is a strong desire to “leave things the way they are.” There is tension between these two components of local community demand for recreation in the D-E NCA. Successful marketing of a community as a destination tourism attraction or as place new residents move to could result in the loss of the traditional use patterns that are also desired by the communities.

Demand from BLM partners is generally associated with the activity type of the partner, and generally these partners are looking for recreation management that enhances or protects their opportunities. For example, quiet-trail users are looking for more quiet-trail opportunities, different OHV riders are looking for more OHV riding opportunities, etc.

BLM recreation planning assumes individuals participate in outdoor recreation, because participation improves the quality of life for the participant. BLM recreation planning further assumes recreation participation results in improved conditions for local communities (social, economic, and political) and improved conditions for the environment. Combined, these improved conditions for individuals, communities and the environment are referred to as recreation outcomes. Participants achieve desired outcomes through participation in preferred activities and preferred recreation settings. As noted above, outcomes can change as a result of changes in the recreation settings (BLM recreation planning manual 8320).

The BLM primarily used the data compiled by the NRLPI of Colorado Mesa University to understand what outcomes participants are looking for and what recreation settings are needed to support the attainment of those outcomes. That said, the information from the NRLPI studies should not be construed as definitive or completely quantitative.

### **NRLPI Survey Results**

The survey asked participants questions about a variety of possible experiences and benefits (outcomes) they might be looking for while recreating. The questions were twofold; what outcomes did they desire, and what outcomes did they attain. Responses to the questions about what outcomes were desired were bundled to create seven different visitor profiles.

Descriptions of the different bundles:

1. *Quiet Contemplative*—This bundle values the experiences of enjoying solitude and contemplative time. They value the results of reduced stress, time alone, and preservation of unique landscapes. This bundle represents 34% of the visitors to D-E NCA.
2. *Health and Well-being*—This bundle values the experiences of developing skills, getting needed exercise, and having access to frequent outdoor physical activity. They value the results of improved physical and mental condition, improved sense of control over their lives, and reduced community health costs. This bundle represents 3% of the visitors to D-E NCA.
3. *Risk Taking and Skills Challenge*—This bundle values the experiences of developing skills and abilities, testing endurance and equipment, and enjoying risk-taking adventure. They value the results of improved self-confidence, improved outdoor skills, and improved self-reliance. This bundle represents 4% of the visitors to D-E NCA.
4. *Affiliation and Social Cohesion*—This bundle values the experiences of enjoying time with family and friends and recreating with others that enjoy the same things. They value the results of developing stronger ties with family and friends, greater involvement in recreation and other land use decisions, and improved community ownership of recreation resources. This bundle represents 26% of the visitors to D-E NCA.
5. *Closer to Nature*—This bundle values the experiences of being in the natural surroundings, enjoying solitude, and enjoying the aesthetics of nature. They value the results of improved knowledge of the outdoors, a closer relationship with the natural world, and increased protection of natural landscapes and resources. This bundle represents 13% of the visitors to D-E NCA.
6. *Heritage Appreciation*—This bundle values the experiences of learning more about the history and the natural landscape. They value the results of improved appreciation of the area's cultural history, greater awareness of this community as a special place, and increased sustainability of the community's cultural heritage. This bundle represents 7% of the visitors to D-E NCA.
7. *Work Where I Can Play*—This bundle values the experience of enjoying frequent access to outdoor recreation. They value the results of living a more outdoor-oriented lifestyle, greater awareness of this community as a special place, and an improved balance between work and play. This bundle represents 13% of the visitors to D-E NCA.

It is important for the reader to recognize participants may fit more than one bundle (e.g., Quiet Contemplative and Heritage Appreciation). That said, the analysis of the data does show the most desired outcomes throughout the D-E NCA were either that people experience solitude and contemplative time, resulting in reduced stress, time alone, and preservation of unique landscapes; or that they experience enjoying time with family and friends and recreating with others that enjoy the same things, resulting in the development of stronger ties with family and friends, greater involvement in recreational and other land use decisions, and improved community ownership of recreational resources.

The data were further analyzed to see how these different visitor profile bundles are geographically distributed throughout the D-E NCA. Top two values by zone:

- Zone 1: 1) Quiet Contemplative and 2) Close to Nature

- Zone 2: 1) Quiet Contemplative and 2) Affiliation and Social Cohesion
- Zone 3: 1) Affiliation and Social Cohesion and 2) Work Where I Play
- Zone 4: 1) Quiet Contemplative and 2) Affiliation and Social Cohesion
- Zone 5: 1) Affiliation and Social Cohesion and 2) Quiet Contemplative

An interesting aspect of this analysis is both the Quiet Contemplative and Affiliation and Social Cohesion values surfaced within the top two values in four of the five zones, suggesting two different types of users are recreating in the same areas.

To better understand what settings these on-site visitors want protected, the survey asked a series of questions about recreation setting characteristics. As stated above, the recreation settings are closely related to the types of outcome results achieved from recreation.

- *Naturalness*: Results suggest visitors in all areas of the D-E NCA would like to see minimal contrast between the natural landscape and human development. Respondents thought the naturalness attribute should be managed somewhere between Primitive and Middle Country in Zones 1, 2, and 4; and between Primitive and Front Country in Zones 3 and 5
- *Visitor Facilities*: Results suggest visitors would like to see more visitor facilities to support recreation in Zones 2 and 3 where they would like the visitor facilities attribute managed between Back Country and Front Country. Visitors would like minimal visitor facilities in Zones 1, 4, and 5.
- *Contacts and Group Size*: Results suggest visitors do not want to see very many groups. In all Zones the number of contacts with other groups was preferred between Primitive and Back Country (less than six encounters per day). The results of group size preference shows visitors prefer small groups in Zones 1, 4, and 5 (average group size between three and seven). Larger groups are preferred in Zones 2 and 4 (average group size between 8 and 20)
- *Visitor Services*: Results suggest visitors require minimal services to support recreation outings. Across all zones, visitors prefer a more Primitive to Middle Country setting for the visitor services attribute (ranging from no services at all to basic maps occasional BLM personnel presence).
- *Management Controls*: Generally, visitors are looking for some level of rules and regulations in all zones, with the exceptions of Zones 1 and 3. Preferences for the management controls attribute in Zones 2, 4, and 5 range from Middle Country to Front Country (moderate levels of restrictions such as limiting camping to designated sites, requiring pack it out for human waste and fire ash; limited closures). In Zones 1 and 3, visitors prefer less restrictions, preferring a Primitive to Back Country setting for the management control attribute (either no regulations or very limited restrictions).

### **NRLPI Focus Group Results**

In addition to the survey, the NRLPI conducted six focus group meetings, three in Grand Junction and three in Delta. Two of the meetings were focused on wilderness management. A summary of the two meetings that focused on wilderness management can be found in the Wilderness section of this chapter. The other four meetings focused on Zones 1, 2, 3, and 5 shown on the map above and covered issues related to recreation.



A total of 77 participants signed in at these four meetings and had the opportunity to identify affiliation with a group when they signed in. The following is a breakdown of the number of participants and affiliations by zone (note that government representatives did not include Federal employees).

- Zone 1: Hunting Ground; 15 participants; Government 20%; Quiet User/Environmental 27%; Riverfront Commission 13%; OHV 33%; and Unaffiliated 7%
- Zone 2: Gunnison River; 10 participants; Gold Panner 10%; Quiet User/Environmental 10%; Land owner/Rancher 10%; OHV 30%; and Unaffiliated 40%
- Zone 3: Cactus Park; Government 8%; OHV 75%; and Unaffiliated 17%
- Zone 5: Escalante Canyon/Sawmill Mesa; Horseman 7%; Geologist 7%; Quiet User/Environmental 4%; Land owner/Rancher 33%; OHV 30%; and Unaffiliated 19%

Participants were asked five questions related to recreation planning within the D-E NCA. The same questions were asked at each meeting. Participants were asked to identify and rate the issues within the zone; what community and the environmental benefits arise from recreation in the zone; what opportunities exist for public-private partnerships; whether participants engaged in more than one activity during a single outing; and how recreation management interacts with management of other resources and resource uses in the D-E NCA.

In Zones 1 and 3 the top issues were recreation travel related (trails, new routes, road closures, community connection trail, and travel management). In Zone 2 the top issue was permitting (commercial permits and permits for private use). In Zone 5 the top issues were related to recreation impacts on other uses and private property (multiple use and private land/property). The results of these meetings verify the competing components of recreation demand noted above. In Zones 1, 2, and 3, the most important recreation planning issues were to protect and enhance recreational opportunities, whereas in Zone 5, the most important issues were how to preserve existing land uses, primarily ranching and traditional recreation uses like hunting.

There were a variety of community and environmental benefits identified by each group. The community benefit identified in all the zones was the economic benefits that arise from service providers that support recreation participation (gear shops, lodging, gas, guide services, restaurants).

Like the question on community and environmental benefits, the question about public-private partnerships also resulted in a variety of responses. The one partnership opportunity that was common to all zones was the opportunity of connecting youth to the landscape through adventure recreation.

The question about whether recreation participants are focused on a single activity during an outing or whether participants tend to bundle several activities into a single outing clearly showed participants are much more likely to engage in several activities in one outing; suggesting participants in the focus groups support management of multiple activities within a single zone.

The focus group report did not include responses from Zone 5 on the question of how recreation management interacts with management from other resource and resource use management objectives. The results from Zones 1, 2, and 3 identified how recreation use impacts biological and cultural resources and interferes with other resource uses (primarily livestock grazing). The results also identified how recreation is restricted by management actions to protect biological

and cultural resources as well as how other uses (grazing) can negatively impact recreation setting. See the NRLPI's *Dominguez-Escalante NCA Recreation Report* (CMU 2011) online at <http://1.usa.gov/1qKkMV>

## Recreation Trends

Currently, recreation trends in the D-E NCA include increased motorized use as a result of loss of motorized recreational opportunities on other public lands (travel planning on the forest, UFO Dry Creek Travel Management, and GJFO Bangs Canyon and North Fruita Desert SRMA travel decisions); increased hiking and equestrian use as a result of BLM development, i.e., the Bridgeport Bridge. The development of new facilities in Cactus Park is new, so there is no trend data on whether use has increased. The most significant trend in use patterns is related to the population increases of the past decade in Mesa, Delta and Montrose Counties. The NRLPI survey data show 92 percent of overall recreational users in the D-E NCA are from Colorado. The data also show 61 percent of overall users are from Mesa, Delta, or Montrose Counties. As local population changes occur, the BLM anticipates that recreation use in the D-E NCA will change.

### 3.3.2. Scientific Use

The scientific resources of the D-E NCA were identified in the 2009 Omnibus Act as purposes for the area's designation as an NCA. Science can encompass research by academic or professional institutions, and applied research by BLM staff, as well as State and Federal agencies.

Science in National Landscape Conservation System units is defined broadly as "including basic and applied research in natural and social science, as well as inventory and monitoring initiatives" (BLM 2007a). In addition, within NLCS units, there is an expectation for "identifying science needed to address management issues, communicating those needs to science providers, and incorporating the results into the decision making process" (BLM 2007a).

Ecosystem management is also a stated goal of NLCS units. Ecosystem management was defined for the BLM as; "The integration of ecological, economic, and social principles to manage biological and physical systems in a manner safeguarding the long-term ecological sustainability, natural diversity, and productivity of the landscape" (Morrissey, Zinn, and Corn 1994). Further, the goal of ecosystem management for the BLM is "to develop and implement management that conserves, restores, and maintains the ecological integrity, productivity, and biological diversity of public lands" (Morrissey, Zinn, and Corn 1994).

Science-related activities within the D-E NCA are currently managed by applicable programs within both the Grand Junction and Uncompahgre Field Offices. This includes internal monitoring programs being conducted by the BLM, as well as external research being conducted by individuals outside of the BLM. Because these activities are usually managed in a resource-specific manner, much of the information that would be found in this section can instead be found under specific resources.

Each resource program housed under the BLM currently monitors the condition of their resource. For example, water quality and water flow are monitored in the D-E NCA by hydrologists and cultural sites are monitored by archeologists. Significant differences in monitoring methodology for most resource programs exist between the GJFO and UFO. This has led to challenges in reconciling two field office datasets into a single D-E NCA-wide dataset.

Rangeland monitoring, which is used to assess the condition of a wide variety of resources from wildlife habitat to water quality, is done very differently in the GJFO and UFO. Although both offices use land health assessments to compare current conditions to rangeland health standards, the methodology used to assess land health as well as the role that these assessments play in management decisions are different.

The BLM partners with other State and Federal agencies in order to monitor many resources. These partners include CPW, U.S. Geological Survey, CNHP, Colorado Mesa University and the USFS.

Research by external researchers is permitted on a case-by-case basis. There are currently three active paleontology research sites in the D-E NCA. In addition, academic research in fire ecology, soil development, and forestry (among other topics) has been conducted in the area now known as the D-E NCA.

## **Monitoring**

The BLM and FLPMA require that BLM staff monitor the condition of resources over the life of resource management plans. Monitoring is used to do the following two tasks (BLM 2005):

- Track the implementation of land use planning decisions (implementation monitoring)
- Collect the data/information needed to evaluate the effectiveness of land use planning decisions (effectiveness monitoring)
- Collect basic data to determine and track the condition of resources (baseline monitoring)
- Collect inventory data to determine ‘initial’ conditions of resources (inventory)

## **Evaluation**

The BLM also requires periodic evaluations of land use plan decisions and NEPA analyses. BLM H-1601-1, *Land Use Planning Handbook* (BLM 2005), suggests that plans should be evaluated at a minimum every five years, prior to plan revisions and for major plan amendments. Plans are evaluated to determine whether the following are true (BLM 2005):

- Decisions remain relevant to current issues
- Decisions are effective in achieving (or making progress toward) desired outcomes
- Any decisions need to be revised
- Any decisions need to be dropped from further consideration
- Any areas require new decisions

## **Adaptive Management**

Adaptive management is defined by the Office of Environmental Policy and Compliance (OEPC) as “...a system of management practices based on clearly identified outcomes, monitoring to determine if management actions are meeting outcomes, and, if not, facilitating management changes that will best ensure that outcomes are met or to re-evaluate the outcomes” (Taylor 2003).

The BLM has begun to integrate adaptive management into resource management plans and other NEPA documents. However, bureau-wide guidance has not been issued.

### 3.3.3. Educational Use

#### Current Use

The D-E NCA provides a significant opportunity for learning and education, particularly related to biological, cultural, geological and paleontological resources. Throughout much of the D-E NCA, learning happens in a self-guided environment; very few formal learning sites exist in the D-E NCA. Interpretive signs can be found at the Dominguez Campground, Escalante Canyon, Bridgeport and the Gunnison Gravels ACEC in Cactus Park. Despite the paucity of established interpretive sites, many longtime residents describe their experiences in the D-E NCA in terms that suggest learning and personal development.

The D-E NCA is occasionally used by student groups for field trips and experiential education. These trips are permitted on a case-by-case basis. Some examples of organizations that have taken education-related trips to the D-E NCA include the Partners of Delta County and EXPLORE!. Some recreational outfitters, such as Centennial Canoe and Gunnison River Expeditions, operate under business models that prominently feature opportunities for learning and education. All of these organizations have consistently taken trips down the Gunnison River, and provided opportunities for experiential education. In addition, anecdotal observations suggest that many field schools include stops in the D-E NCA as part of west-wide field schools on geology and paleontology, due to the quality and uniqueness of the D-E NCA's paleontological and geological resources.

Although neither of the existing RMPs provide general guidance regarding education, both RMPs designated specific areas for educational purposes, including ACECs, Outstanding Natural Areas (ONAs) and Research Natural Areas (RNAs) such as the Gunnison Gravels ACEC.

#### America's Great Outdoors Initiative

The America's Great Outdoors (AGO) Initiative was launched on April 26, 2010 by executive order. The general goal of this initiative is to reconnect Americans with their 'natural and cultural heritage'. The following is excerpted from *America's Great Outdoors: A Promise to Future Generations*, an interagency report released in February 2011:

*"The result is a call for a grassroots approach to protecting our lands and waters and connecting all Americans to their natural and cultural heritage. AGO seeks to empower all Americans-citizens, young people, and representatives of community groups; the private sector; nonprofit organizations; and local, State, and tribal governments-to share in the responsibility to conserve, restore, and provide better access to our lands and waters in order to leave a healthy, vibrant outdoor legacy for generations yet to come."*

This initiative includes a specific objective that the Federal Government should "engage young people in conservation and the great outdoors"

BLM staff could develop an education plan that would establish a comprehensive strategy for education-related activities in the D-E NCA. This plan would incorporate objectives related to research, interpretation, as well as school group visitation, into a single guiding document for the

D-E NCA. By doing so, each resource program could draw on a single document that would guide the education components of their respective programs in a comprehensive, interdisciplinary and consistent way. Instead of a stove-piped approach for each discipline, D-E NCA could be the umbrella over an interdisciplinary approach to education for audiences in K-12, college and community groups. For example, a class interested in rock art might also be interested to learn about opportunities to learn about geology, wildlife biology or water quality in D-E NCA.

### 3.3.4. Livestock Grazing

Livestock grazing may be permitted on public lands. The two primary units associated with livestock grazing are allotments and AUMs. Allotments are the geographic boundaries associated with each grazing permit, based in the grazing districts and permitting system established to manage livestock use of grazing districts by the 1934 Taylor Grazing Act. Permitted use levels (measured in AUMs) are also an important allocation, and help define the amount of forage available within an allotment.

Grazing is also a traditional and historic use within the D-E NCA. In recognition of this, the 2009 Omnibus Act stated that the BLM “*shall issue and administer any grazing leases or permits in the Conservation Area in accordance with the laws (including regulations) applicable to the issuance and administration of such leases and permits on other land under the jurisdiction of the Bureau of Land Management*”

#### Allotments and AUMs

204,962 acres (97.5 percent) of the BLM lands within the D-E NCA are within grazing allotment boundaries and are managed in accordance with existing RMPs (Map 3–31). Approximately 5,056 acres (2.44 percent of the D-E NCA) are not allotted. Unallotted acreage includes small isolated parcels not included within existing allotment boundaries.

There are 17 allotments in the D-E NCA (Table 3.40). In addition to BLM land, these allotments may contain other lands, including USFS, BOR, municipal, State, and private land. Of these allotments, 16 are permitted for livestock grazing and 1 is vacant. This allotment, known as the Bean allotment, has been relinquished and identified for closure due to its small size. Of the 16 permitted allotments, 11 are used for grazing cattle or cattle and horses (primarily cow/calf operations), with the remaining five allotments allocated to domestic sheep. Typically, cattle graze on the D-E NCA during the spring and fall periods, and sheep graze during the winter and early spring. Five allotments are entirely within the D-E NCA, and 11 extend outside the D-E NCA. Several of the allotments are used as part of an operation that includes USFS allotment at higher elevations. Some higher-elevation allotments also include grazing during the summer period. The USFS and the BLM cooperate in determining range readiness for the allotments and coordinate movement of livestock from the BLM allotments to USFS allotments. Total permitted use is 14,403 AUMs, with an additional 2,112 AUMs in suspension.

**Table 3.40. Allotments by Use**

Allotment Use	Number of Allotments	Acres	Active AUMs
Cattle	11	171,872	11,178
Sheep	5	22,381	2,644

Allotment Use	Number of Allotments	Acres	Active AUMs
<b>Cattle and Horse</b>	1	10,668	581
<b>Total</b>	17	204,921	14,403

The BLM adjusts permitted use numbers occasionally due to conversions of the class of livestock, changes in allotment boundaries or livestock management techniques, or changes to meet carrying capacities as determined by vegetative inventories. Within the past five years, the BLM has made adjustments to authorized grazing use in the D-E NCA that are based on data collected during land health assessments, vegetative inventories, ecological site inventories, and other rangeland monitoring. Vegetation treatments also influence livestock management; some of these projects result in changes of use or mitigation to minimize impacts during vegetative recovery. The presence of resources such as wildlife, threatened and endangered plants and animals, riparian resources, cultural resources, ACECs, and Wilderness also affect grazing management systems. Some of these areas have been fenced off from livestock, while other areas are monitored for livestock impacts.

Each allotment within the D-E NCA is categorized as custodial, maintain, or improve, consistent with range management policy. *Custodial* allotments in this area are small parcels of public land intermingled with larger tracts of private and/or State land. Due to the small amount of public land involved, these allotments require significant investments of time or money that are not justified. A *Maintain* categorization means that the BLM is either satisfied with the current conditions or the allotment does not contain highly sensitive resources. Although some investment in time or money is justified in these allotments, they are not as high a priority as *Improve* category allotments. *Improve* category allotments are either in unsatisfactory condition or contain significant sensitive resources that justify investments of time and money. These allotments are our highest priority for monitoring and range improvement development. In addition, changes have occurred as needed on a case-by-case basis as circumstances deem necessary.

As of 2010, 13 allotments are part of an implemented allotment management plan (AMP) or grazing use agreement that identifies a change in livestock management and/or more intensive management. Five of these allotments are in the Improve category, eight are in the Maintain category, and four are in the Custodial category. Changes in management may be due to conflicts with other uses, conflicts with other resources; adjustment in authorized active AUMs based on Ecological Site Inventory; or a land health assessment where livestock grazing has been determined to be a causal factor. Improve category allotments have priority in completing AMPs but due to new resource issues and increased focus in some areas, some AMPs have been established for lower priority allotments.

## Range Improvement Projects

The BLM maintains a spatial database of range improvement projects. Range improvement projects include developments such as water developments (e.g., reservoirs, catchments, stock tanks and springs), corrals, trails, fences, enclosures and cattle guards. They also include vegetation treatments that have been completed for livestock range improvement. Within the D-E NCA there are 361 documented range improvement projects. Many of these projects have joint benefits for wildlife, fuel reduction and recreation (hunting in particular).

The BLM and many permittees work within established partnerships and collaborations with the District Grazing Board of Advisors, CPW's Habitat Partnership Program, Uncompahgre Project and grazing permittees on range improvement projects and funding.

## Water Developments

In the arid environment such as the D-E NCA, access to water is a crucial component of livestock grazing operations. Within the D-E NCA, there are 176 documented livestock water developments (9 catchments, 44 dams, 1 guzzler, 57 reservoirs, 10 springs, 54 stock tanks and 1 well) (Map 3–32). Some areas of the D-E NCA are far more heavily concentrated with livestock water developments than others. The Wagon Park and Cactus Park areas are heavily concentrated with water developments, whereas most of the Wilderness does not contain water developments. The construction of water developments for livestock can be used to help distribute cattle within an allotment. Wildlife also use, and may benefit from, maintained and functioning water developments.

The BLM proposed to construct seven earthen dams within what is now the Wilderness portion of the Dominguez Allotment when an EIS was completed for the creation of the Dominguez Canyon Wilderness Study Area in 1989. These dams were never constructed. The Omnibus Act states that the BLM “*may allow construction of new livestock watering facilities within the Wilderness in accordance with 1) section 4(d)(4) of the Wilderness Act; and 2) the guidelines set forth in Appendix A of the Committee on Interior and Insular Affairs of the House of Representatives accompanying H.R. 2570 of the 101st Congress.*”

## Vegetation Treatments

Vegetation has been manipulated by mechanical treatments and controlled burning. Many treatments have occurred through the fuel reduction program as part of the National Fire Plan and wildlife funding. Various wildlife organizations have contributed to these projects. Vegetation manipulation projects have been used to improve allotment conditions and to reset seral status (move vegetation from late seral shrubs to early seral grasses and forbs) but have been rarely used in recent years to increase total permitted use. Several treatments have occurred in areas that were treated in the 1960s and 1970s through chaining and were in need of re-treatment. Livestock are excluded from burned areas until monitoring results, documented in writing, show emergency stabilization and rehabilitation objectives have been met.

Range improvements often enable more intensive grazing systems and encourage better livestock distribution and grazing utilization, but they also require more management on the part of the grazing permittee. Range improvement and permittee involvement may become more crucial in sustaining future resource demands. The BLM’s traditional goal in managing livestock grazing is to provide sustainable habitat for livestock and other animals. That’s likely to remain the primary focus of the BLM’s management of livestock. Grazing also reduces grass biomass and fuel loads, thus indirectly reducing fire frequency and enhancing the expansion of forests or woodlands (Bachelet, Lenihan, Daly, and Neilson 2000).

## Ongoing Assessment, Inventory and Monitoring

Assessment, inventory and monitoring are critical components of any livestock management program. All allotments within the D-E NCA are monitored. Methods include photo points, nested frequency transects, Daubenmire cover transects, utilization, long term trend, apparent trend, actual use, big game transects, and allotment supervision. Each allotment has one or more of these studies. Monitoring data are analyzed during the grazing permit renewal process or as needed. An ecological site inventory has been completed within the GJFO portion of the D-E NCA. Data obtained from the inventory result in a computation of species composition,

production, and ecological seral stage. Results are used in permit renewals, active AUM adjustments, fire and fuel management, and assessment of wildlife habitat.

The BLM in Colorado approved land health standards and guidelines for livestock management in 1997, through land use plan amendments. The standards established localized conditions needed to sustain public land health for soils, riparian systems, upland vegetation, wildlife habitat, threatened and endangered species, and water quality (BLM 1997 and Appendix D).

Range conditions within D-E NCA allotments vary widely according to the BLM's most recent round of land health assessments. For areas not meeting land health standards or for areas that are reported to be meeting land health standards with problems, causal factors for these problems include uses other than livestock grazing such as recreation, wildlife use, right-of-way developments, and weed infestations. Therefore, the numbers in Table 3.41 below are merely shown to present existing range conditions and should not be interpreted to reflect current livestock grazing practices within each allotment.

**Table 3.41. Land Health Assessment Results by Grazing Allotment**

Allotment Name	Total Acres of Allotment within the D-E NCA	Acres Meeting Land Health Standards 1 (Soils), 3 (Vegetative Communities) and 4 (Special Status Species)	Acres Meeting Land Health Standards 1 (Soils), 3 (Vegetative Communities) or 4 (Special Status Species) with Problems	Acres Not Meeting Land Health Standards 1 (Soils), 3 (Vegetative Communities) or 4 (Special Status Species)	Acres Not Assessed for Land Health Standards 1 (Soils), 3 (Vegetative Communities) and 4 (Special Status Species)
Alkali Flats	3,451	1,532	0	1,912	5
Antelope	1,764	461	173	1,092	38
Bean	361	342	0	15	0
Cactus Park-Club Gulch	8,388	2,584	5,255	0	543
Dominguez Individual	52,895	42,960	1,647	996	7,277
Dry Mesa	16,325	11,249	3,835	679	679
Escalante Flats	2,022	532	1,490	0	561
Gibbler Common	51,563	46,270	4,046	705	175
Joker	799	688	0	0	112
Kannah Creek Common	9,620	6,829	2,292	443	31
Kannah Creek Individual	152	304	0	0	0
Lower Escalante	2,319	919	7	1,329	55
Sawmill Mesa	10,668	5,269	2,314	982	2,111
Twenty Five Mesa	5,626	2,810	1,331	2	1,482
Wagon Park	32,451	29,166	2,278	287	719
Wells Gulch	6,447	2,114	2,070	2,133	117
White Ranch	55	55	0	0	0
Total within D-E NCA	204,906	154,085	26,738	10,575	13,228
<i>Note: A number of causal factors may contribute to land health problems, including livestock grazing, wildlife use, recreation, right-of-way developments, and weeds.</i>					



Guidelines on livestock grazing management include tools, methods, strategies, and techniques designed to maintain or achieve healthy public lands as defined by the standards. The standards and guidelines are implemented on an ongoing basis through land health assessments, determination documents, EAs, permit renewals, and other permit changes. These standards define healthy landscapes, so they pertain not only to livestock grazing, but also to other activities affected rangeland vegetation, such as recreation and use of rangeland forage by wildlife.

Sustainable livestock grazing and desired rangeland conditions require the collective management of forage, water, soil, and livestock by the BLM and the livestock owners and operators. An interdisciplinary approach ensures effective management of the multiple resource values and uses in the D-E NCA planning area. Reducing the duration of grazing use and improving livestock distribution are important techniques in meeting rangeland objectives, particularly those associated with riparian areas. Other techniques that have been used in the D-E NCA to improve grazing management include the following:

- Adjusting grazing permits
- Changing active authorized AUMs
- Changing management (e.g., rest, rotation, season of use)
- Adding terms and conditions related to permits and allotments
- Construction of water developments and pasture fencing
- Maintaining range improvements and grazing permits

Periodic monitoring and adjustment is especially critical, because conditions on allotments change year-to-year according to precipitation, temperature, how the land was used the previous year, and other factors including the following:

- Climatic factors
- Wildlife
- Past and present livestock use
- Recreation use
- Population increases

For a description of the current condition of the D-E NCA's vegetative resources, see the Biological Systems section of this chapter.

## **Trends in Range Management**

As rural areas surrounding the D-E NCA have urbanized, expectations related to uses of the public lands have changed, which can cause conflicts with livestock grazing. New landowners are often unfamiliar with State livestock laws and associated fencing requirements. Conflicts may develop when livestock authorized on public land drift onto private land. This is largely the result of public/private land boundaries that are not fenced or that are poorly fenced, or where fences have not been maintained. It is BLM policy not to fence, or be responsible for maintenance, on

boundaries bordering public land. In most instances the BLM has determined that it is not in the public interest to construct these fences, largely because it would not be practical or economical.

Over the past several decades, elk populations have increased, which can change the demands on forage resources. Although most of the competition occurs on private land, particularly during the winter, further increases in elk populations will likely increase forage competition on public lands. The level of concern varies among grazing permittees. Those who own land where concentrated elk use occurs typically express the most concern over distribution problems. On the other hand, many grazing permittees are engaged in guiding and outfitting activities as another source of income.

### 3.3.5. Transportation and Travel Management

Travel and Transportation Management is an interdisciplinary approach that addresses resource uses and associated access to public lands and waters, including motorized, non-motorized, mechanical, and animal-powered modes of travel. The objectives are to:

1. Establish a long-term, sustainable, multi-modal transportation system of roads, primitive roads, and trails that addresses public and administrative access needs to and across BLM-administered public lands and related waters.
2. Support the agency's mission and land use planning goals and objectives to provide for resource management, public and administrative access, and transportation needs.
3. Manage travel and transportation on the public lands and related waters in accordance with law, executive order, proclamation, regulation, and policy.

### Current Route System

The current system of linear transportation features has developed over time as a result of administrative access, resource use needs, and recreational access and use (Table 3.42 and Map 3-33).

**Table 3.42. Route Inventory within the D-E NCA**

Type of Route	Miles
County-Maintained Roads on BLM Lands	83
County-Maintained Roads Not on BLM Lands (Private or State Lands)	30
BLM-Maintained Roads	14
BLM Not Maintained (Two-Track)	484
ATV-Width Trails	53
Single Track	15
Wilderness Routes	89

Administrative routes in the D-E NCA were created to provide access to monitoring sites, rights-of-way, and access to private lands. Generally, rights-of-way are concentrated along U.S. Hwy 50, along the railroad and river, and along Hwy 141 near Ninemile Hill. There are rights-of-way for county-maintained roads, communication lines and facilities, water developments and private property access. See the lands and realty section for more on rights-of-way.

Very few routes have been designed and built by the BLM. Most routes are user-created for resource use access, vegetation treatment projects, livestock grazing infrastructure and operations, mineral materials sites, and forest product extraction. In some areas, route density is so high it confuses visitors to the D-E NCA. In these high density areas, there are often spider webs of multiple, parallel routes, and dead-end routes.

Recreational routes were created (authorized and unauthorized) in response to demand for trail-based recreation. As demand for trail-based recreation (especially OHV riding) increased, the number of routes increased. The routes developed for administrative and resource uses provided primary access throughout most of the D-E NCA. These primary access routes were created for administrative and resource uses, not for recreation. As a result, the routes do not always provide the recreational experience that users are looking for. Over time, recreational users extended, connected, or pioneered new routes from the administrative and resource use routes. This pattern of route development has resulted in high route densities (as in Cactus Park) where the administrative and resource use routes provide access for recreational use.

### **3.3.6. Land Tenure and Land Use Authorizations**

#### **Land Use Authorizations**

The planning unit currently has 40 land use authorizations including the following (Map 3–34):

- Five distribution power lines
- Five telephone lines
- One gas pipeline
- Three water facilities (note that this does not include water facilities that were in existence prior to the Federal Land Policy Management Act of 1976)
- Two communication sites: one operated by the Union Pacific Railroad and a multi-facility site on Ninemile Hill
- One railroad
- State Highway 50
- Tri-State Generation and Transmission Association maintenance access road located inside D-E NCA boundary
- Six roads serving private property

Some of the facilities in the D-E NCA were built prior to the passage of the Federal Land Policy Management Act (FLPMA), such as the Rio Dominguez Ditch along the Gunnison River near the mouth of Dominguez Canyon. These pre-FLPMA facilities do not have a right-of-way grant associated with them.

In general, the rights-of-way are located adjacent to the highway and county-maintained roads and are primarily situated between Highway 50 and the Gunnison River in the southern portion of the D-E NCA (Map 3–34).

## Withdrawals/Land Classifications

BOR withdrawals exist along the Gunnison River (the Dominguez Dam Project) as well as Power Site Classifications located along the river. There are Public Water Reserves scattered throughout the planning area, primarily located south and east of Escalante Creek, and in the northern Cactus Park area. The BOR has requested termination of the Dominguez Project withdrawal.

## Land Tenure

The planning area encompasses approximately 210,012 acres of public (BLM) surface lands. There are an additional 6,860 acres of private lands and 1,965 acres of State lands within the planning areas. The Omnibus Act states that the BLM “*may acquire non-Federal land within the boundaries of the Conservation Area or Wilderness only through exchange, donation, or purchase from a willing seller.*” The Act also specifies that any land acquired within the boundaries of the D-E NCA become part of the D-E NCA (and, if applicable, the Wilderness). From 1986 to 2012, the BLM acquired several parcels totaling 826 acres within the D-E NCA boundaries through Land and Water Conservation Fund purchases.

## 3.4. Special Designations

### 3.4.1. Areas of Critical Environmental Concern

An area of critical environmental concern is defined in FLPMA, Section 103(a), as an area of BLM-administered public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards. BLM policies for implementing the ACEC provisions of FLPMA are found in 43 CFR 1610.7-2(b) and BLM Manual 1613 (BLM 1988).

To be eligible for designation as an ACEC, an area must meet criteria for both *relevance* and *importance*. *Relevance* means that an ACEC possesses significant historic, cultural, or scenic values, fish or wildlife resources (including habitat, communities, or species), natural processes or systems, or natural hazards. *Importance* means that the significance of these values and resources must be substantial in order to satisfy a number of criteria. ACECs can also only be designated if the area’s relevant and important values require *special management attention*. Special management attention refers to management prescriptions developed during preparation of an RMP or RMP amendment expressly designed to protect the important and relevant values of an area from the potential effects of actions permitted by the RMP, including proposed actions deemed to be in conformance with the terms, conditions, and decisions of the RMP (BLM 1988). Such management measures would not be necessary or prescribed if the relevant and important features were not present.

Restrictions that arise from an ACEC designation are determined at the time the designation is made, and are designed to protect the values or serve the purposes for which the designation was made. Goals and objectives for each proposed ACEC are identified in Chapter 2, as well as necessary constraints and mitigation measures. The RMP will identify a reasonable range of alternatives that will include current management for existing ACECs, as well as management for newly proposed ACECs.

## **Currently Existing ACECs**

Two ACECs currently exist in the D-E NCA for a total of 2,296 acres. Both were established prior to the area's designation as an NCA.

### **Escalante Canyon ACEC**

The Escalante Canyon ACEC was designated in the 1989 Uncompahgre Basin RMP (BLM 1989a) for its unique recreational opportunities and for its rare plants and plant associations. This ACEC encompasses 2,291 acres in Delta and Montrose Counties and borders part of the Dominguez Canyon Wilderness. This ACEC is also recognized by the State of Colorado as an Outstanding Natural Area.

The Potholes area of Escalante Creek is located within this ACEC, and provides unique recreational opportunities in the form of extreme kayaking, swimming and camping. The UB RMP specifically mentions as a purpose of this ACEC increased public awareness about the dangers of recreation in and around the potholes. Current recreation facilities in this area describe these dangers, and appear to have been successful in reducing ground disturbance, litter and human waste by restricting camping to designated locations and by providing recreationists with restroom facilities.

A number of BLM special status plant species and rare plant associations exist in the seeps that line the canyon's walls and on the benches above Escalante creek. ACEC restrictions direct camping and motorized recreation away from these unique and rare plants and plant associations. Recent surveys conducted by the CNHP suggest that these rare plants and plant associations are in excellent condition.

### **Gunnison Gravels ACEC**

The Gunnison Gravels ACEC was designated in the Grand Junction Field Office RMP of 1987 (BLM 1987) for its unique geological resources. This ACEC encompasses approximately 5 acres in the Cactus Park area of the D-E NCA.

The surficial geology of the site is composed of the Triassic Kayenta Formation sandstone overlain by Quaternary Alluvium composed of approximately 12,000 cubic yards of sand and gravel. These sediments are believed to have been deposited by the ancestral Gunnison River and possibly the Colorado River 1-5 million years ago before they changed flow directions to their present day alignments.

The river gravel deposit is one of only a few such deposits on the Uncompahgre Plateau along the course of the ancient river system. The ancient river system is believed to have changed to present day alignments due to uplift of the Uncompahgre Plateau with its very hard, erosion resistant rock diverting the river flows into the softer, more easily eroded rocks of the Mancos Shale (Lohman 1965).

The geological resources of the Gunnison Gravels ACEC continue to be used for educational and scientific purposes. Part of the area has been fenced off to prevent motorized travel that could damage the resources. However, other parts of the ACEC are not fenced off and have experienced some damage as a result of motorized vehicle use.

### 3.4.2. National Trails

The Old Spanish NHT is the only national trail within, or adjacent to, the planning area for the D-E NCA.

In 2002, Congress established the Old Spanish NHT through an amendment to the National Trails System Act (NTSA). The Old Spanish NHT runs from Santa Fe, New Mexico to Los Angeles, California. Variations of the trail cross parts of New Mexico, Colorado, Utah, Nevada, Arizona, and California. The North Branch of the Old Spanish NHT passes through western Colorado. There are 4.3 miles of this branch of the Old Spanish NHT which cross through the Hunting Ground area of the D-E NCA. Adjacent stretches of the Old Spanish NHT are found in the BLM's Uncompahgre and Grand Junction Field Offices.

A Comprehensive Administrative Strategy is currently under development for the entire length of the Old Spanish NHT. The CAS will identify the nature and purposes of this NHT and identify high potential historic sites and high potential route segments of the NHT. To guide this Proposed RMP while the CAS is under development and consistent with Section 2(a) of the NSTA, the nature and purposes of the trail are to afford the public the opportunity to connect to the trail resources and the trail story.

### Resources, Qualities, and Values

According to BLM Manual 6280 (BLM 2012g), the resources, qualities, and values of a national trail are the significant scenic, historic, cultural, recreation, natural (including biological, geological, and scientific), and other landscape areas through which such trails may pass as identified in the NTSA.

Portions of the Old Spanish NHT that are present in the D-E NCA were inventoried in 2011 as part of the Fool's Hill analysis unit of the Northern Branch of the NHT (Horn, Prouty, Pfertsch, and Zachman 2011). Portions of this analysis unit also fall within the BLM's Uncompahgre Field Office. A total of 13.2 miles of survey occurred in the Fool's Hill analysis unit. The Fool's Hill portion was just one analysis unit in their larger work throughout the State of Colorado (Horn, Prouty, Pfertsch, and Zachman 2011).

The alignments inventoried were based on the designated route under the NTSA, as amended in 2002. Detailed historical research was conducted prior to inventory and it was determined that the Old Spanish NHT was likely a series of Native American trails that were then utilized by trappers and traders during the 1820s through the 1840s to reach a variety of locations. The trails then continued to be used by Native American groups, such as the Ute, and by government exploration parties (the Beale Expedition and the Gunnison Expedition in 1853), the U. S. military under Col. Loring in 1858 and then miners and settlers. Some of these later uses, particularly during the period of use as a military road, changed the historic fabric of the property as the trail was modified and upgraded.

During the inventory, 10 segments that were recorded were determined to be verified, evident and unaltered. Thirty-two locations were verified and evident with minor alteration, three segments were verified with little remaining evidence, one segment was verified and has been permanently altered, three segments were not verified, eight segments were verified with historic reconstruction present and 17 segments were not evaluated.

## **Associated Setting**

The associated setting of a NHT is the geographic extent of the resources, qualities, and values or landscape elements within the surrounding environment that influence the trail experience and contribute to resource protection (BLM 2012g). For the segments of the Old Spanish NHT within the D-E NCA, the associated setting for the NHT is the Hunting Ground area, which extends from the northeastern boundary of the D-E NCA along Highway 50 to the canyon rim overlooking the Gunnison River.

The Hunting Ground is a landscape of rolling hills of Dakota/Burro Canyon sandstone and Mancos Shale, punctuated by a series of deep drainages running southwest from the Grand Mesa to the Gunnison River. The southwestern boundary of the Hunting Ground is a sheer rim that overlooks the Gunnison River. Elevations within the Hunting Ground range from approximately 4,900 feet along the northeastern margins of the area to approximately 5,600 feet on high points along the rim of the Gunnison River.

The vegetation within the Hunting Ground is predominantly of the desert shrub/saltbush vegetative community, composed of drought-resistant shrubs and grasses. Concentrations of juniper trees can be found in the bottoms of drainages and in the higher elevations within the area along the rim of the Gunnison River. Some areas within the Hunting Ground are currently dominated by non-native noxious/and or invasive weeds such as halogeton and cheatgrass. Colorado hookless cactus, a federally endangered plant, is found throughout the Hunting Ground. Wildlife species commonly seen within the Hunting Ground include white-tailed prairie dog, pronghorn, coyote, as well as golden eagles and other raptors.

Due to the topography and vegetation of the Hunting Ground, the scenery of the area affords wide views that extend to the rim of the Gunnison River and some high points on the other side of the river and to the Grand Mesa. This viewshed includes extensive human development, including Highway 50, pipelines, transmission lines, communication towers, and private lands with associated structures.

The Hunting Ground has been inhabited by humans for the past 12,000 years. Groups known to archaeologists as the Paleoindians, archaic peoples, formative cultures, and most recently the Utes and Euroamericans, have left physical remains throughout this part of the D-E NCA. Native American residents of the Hunting Ground left evidence of their time there in the form of open lithic scatters, prehistoric campsites, trails, rock art, and isolated finds. Euroamerican peoples have left their mark on the Hunting Ground with cultural resources sites such as trails, roads, stock ponds, and homesteads. The continued presence of such sites is essential to fulfilling the nature and purpose of the Old Spanish NHT.

A visual resource inventory within the Hunting Ground was conducted as part of the NCA planning process. The inventory was conducted in two parts. The north end of the trail area was inventoried as part of the Grand Junction Field Office Visual Resource Inventory, and the southern end of the trail area was inventoried as part of the Uncompahgre Field Office Visual Resource Inventory.

Both inventories assigned a Scenic Quality rating C for the trail area. The inventories noted the lack of variety in the landscape and the presence of communication lines and other cultural modifications as justification for the Scenic Quality Rating. The Grand Junction inventory rated the Sensitivity Level for the trail area as high, and the Uncompahgre inventory rated the Sensitivity

Level as low. Both inventories placed the trail area within the foreground/middleground distance zone. The combination of the Scenic Quality Rating, the Sensitivity Level, and the Distance Zone for the trail area resulted in a Visual Resource Inventory Class III for the GJFO part of the trail area and a Visual Resource Inventory Class IV for the UFO part of the trail area.

The associated recreation setting describes the natural qualities of the landscape (*physical*), the qualities associated with patterns and levels of use (*social*), and the qualities created through management actions (*operational*). Each setting is further defined by three different attributes. Each of these attributes is classified on a continuum from primitive to urban using different indicators:

- Physical setting is defined by: 1) remoteness (how far a visitor is from a route); 2) naturalness (what level of contrast exists between human development and the natural landscape); and 3) visitor facilities (how much development exists to support recreation opportunities).
- Social setting is defined by: 1) contacts (the number of contacts with other groups); 2) group size (the size of other groups); and 3) evidence of use (the amount of evidence in an area of other visitors, including physical impacts and the sights and sounds of others).
- Operational setting is defined by: 1) access (the management allocation for types of travel); 2) visitor services (the amount of on-site information and agency presence); and 3) management controls (the types and amount of restrictions placed on recreation visitors).

Within the trail area, the naturalness attribute is characterized by the human developments including range improvements, numerous two-track routes, and three power lines. None of the improvements significantly contrast with the surrounding landscape. As a result, the character of the landscape has been retained.

There are few signs in the zone, no information kiosks, and no developed facilities (parking areas, toilets, etc.). All the routes, with the exception of county-maintained roads, were created to provide access for other resource programs or were user-created.

The BLM has little information about the number of visitors in the trail area. As a result, both the social attributes of contacts and group size is unknown.

There are few visitors in the area, so the sounds of people are seldom heard; however there may be as many as 20 dispersed campsites with fire rings and parking areas. Evidence of target shooting, off-route vehicle travel, and trash dumping are associated with these numerous campsites.

There are no maps available for the trail area, and recreation patrols are rare. Other than the travel restriction of limiting travel to existing road and trails, there are no specific recreation restrictions on use.

## Primary Use or Uses

Current authorized uses within the Hunting Ground include livestock grazing, recreation, rights of ways, and transportation. Within the trail area, there are five livestock grazing allotments; Kannah Creek Common (9,620 acres), Bean (361 acres), Wells Gulch (6,447 acres), Alkali Flats (3,451 acres) and Antelope (1,764 acres). The Kannah Creek Common and Bean allotments are allocated to cattle grazing, and the Wells Gulch, Alkali Flats, and Antelope allotments are allocated to sheep grazing. Four of these five allotments extend outside of the D-E NCA to the



other side of Highway 50. There are nine water developments and two fences within the trail area that are associated with livestock grazing.

The BLM does not have road/trail counters in the Hunting Ground. As a result, the level of recreation use is not clear. Patrol observations report numerous dispersed campsites, large fire rings, and evidence of target shooting. Recreation patrols and scoping comments suggest the area is valued for OHV riding, hiking, and horseback riding activities. There is an information kiosk outside the D-E NCA on BLM land near Wells Gulch in the Uncompahgre Field Office with information about the Old Spanish NHT. There is no infrastructure related to the trail inside the D-E NCA. Due to the dispersed nature of recreation within the Hunting Ground, the extent to which NHT-related recreation currently occurs in the D-E NCA is unclear.

Within the Hunting Ground, there are 9.4 miles of power line rights-of-way, 14 miles of telephone rights-of-way, and 3.5 miles of canal rights-of-way. These rights-of-way service private inholdings within the D-E NCA. There is one communication tower within the Hunting Ground that services the railroad that runs along the Gunnison River.

Within the trail area, there are 7.5 miles of county-maintained roads, 85.6 miles of two-track routes, 9.5 miles of single-track trails, and 6.8 miles of ATV trails. U.S. Highway 50 runs along the boundary of the planning area and serves as the primary auto-tour route within the trail area. As mentioned above, there is one interpretive kiosk along the highway near Wells Gulch.

### 3.4.3. Wild and Scenic Rivers

Congress enacted the Wild and Scenic Rivers (WSR) Act in 1968 to preserve a river's free-flowing condition, water quality, and outstandingly remarkable values. An important provision of this act governs protecting rivers from the harmful effects of water supply projects. To protect free-flowing character, the Federal Energy Regulatory Commission (which licenses non-Federal hydropower projects) is not allowed to license construction of dams, water conduits, reservoirs, powerhouses, transmission lines, or other project works on or directly affecting WSRs. Other Federal agencies may not assist by loan, grant, license, or otherwise any water resources project that would have a direct and adverse effect on the values for which a river was designated.

The WSR Act requires determinations to be made regarding a river's eligibility, tentative classification, and suitability. Eligibility and tentative classification represent an inventory of existing conditions. Eligibility is an evaluation of whether or not a river is free-flowing and possesses one or more outstandingly remarkable value(s). If found eligible, a river/stream segment is evaluated regarding its current level of development (water resources projects, shoreline development, and accessibility) and a recommendation is made that it be placed into one or more of three classes: wild, scenic, or recreational. Once a segment has been found eligible, the BLM must make a subsequent determination regarding the suitability of that segment for inclusion in the National Wild and Scenic Rivers System. This determination is considered in this Proposed RMP. Once a segment has been found suitable, the segment may be designated as a component of the National Wild and Scenic Rivers System through an act of Congress (see Appendix O for more details).

There are no designated wild and scenic rivers in the D-E NCA. Prior to the D-E NCA's designation, the BLM's Grand Junction and Uncompahgre Field Offices initiated the required eligibility studies of all waterways within their field offices for possible WSR designations. The initial stage of this process resulted in a finding regarding the eligibility of stream/river

segments, summarized in an eligibility report. Upon designation of the D-E NCA in 2009, the BLM produced a summary report that included all segments within the Grand Junction and Uncompahgre eligibility reports that fell within the D-E NCA.

## Eligibility Findings in the D-E NCA

Several waterways in the D-E NCA have been found eligible for inclusion in the National System (Map 3–35). Note that eligibility is only the first step in the wild and scenic river study process. Table 3.43 summarizes the waterways that have been determined to be eligible.

**Table 3.43. River and Stream Segments Found Eligible for Inclusion in the National Wild and Scenic Rivers System**

Eligible Segment	Outstandingly Remarkable Values	Tentative Classification	Total Segment Length (Miles)	Total Acres (1/2-Mile Corridor)
<b>Gunnison River, Segment 3</b>	Recreational, Fish, Historical, Cultural	Recreational	17.48	3,638
<b>Gunnison River, Segment 1</b>	Recreational, Fish, Historical, Cultural	Scenic	15.73	4,136
<b>Big Dominguez Creek, Segment 1</b>	Scenic, Recreational, Wildlife, Geological, Cultural	Wild	15.86	4,573
<b>Big Dominguez Creek, Segment 2</b>	Scenic, Geological, Wildlife, Cultural	Scenic	0.78	352
<b>Little Dominguez Creek, Segment 1</b>	Scenic, Geological, Wildlife, Cultural	Wild	13.14	3,898
<b>Little Dominguez Creek, Segment 2</b>	Scenic, Geological, Wildlife, Cultural	Scenic	2.45	852
<b>Rose Creek</b>	Scenic	Wild	3.90	1,326
<b>Escalante Creek Segment 1</b>	Scenic, Recreational, Geological, Wildlife,	Scenic	8.45	1,824
<b>Escalante Creek Segment 2</b>	Fish, Wildlife	Recreational	8.48	1,103
<b>Cottonwood Creek</b>	Vegetation	Scenic	18.27	4,734
<b>Totals</b>			104.54	26,436

## Stakeholder Input

### Gunnison River Basin Stakeholder Group

In anticipation of the requirement that the BLM evaluate wild and scenic river suitability during this planning process, as well as for the RMP revision being undertaken by the Uncompahgre Field Office, a group of stakeholders convened a series of independent meetings in 2010 and early 2011. This group first discussed eligible segments within the Uncompahgre Field Office before moving on to segments within the D-E NCA. Five meetings were used to discuss D-E NCA segments.

These meetings were used to assemble information on existing uses and local values, potential threats to the outstandingly remarkable values identified by the BLM in its eligibility report, and to identify existing protections for these ORVs. The group also articulated the activities and attributes they feel are most important to protect on the eligible stream segments and their recommendations for managing them, including whether or not the segments should be found and found suitable for inclusion in the National Wild and Scenic Rivers System. The BLM, along with CPW and representatives of other agencies and organizations, attended this series of

discussions to provide information and answer questions as the stakeholders assembled their information and recommendations.

Ultimately, this group of stakeholders recommended that no river or stream segment be considered suitable for further protections under the Wild and Scenic River Act. The stakeholders, comprised of landowners, farmers, ranchers, outfitters, water providers, water managers, recreational prospectors, electrical utility representatives, ATV riders, river recreationists, local governments, the State of Colorado, and interested citizens stated that existing laws provide adequate protection to the proposed waterways. They also stated the belief that WSR protections were not needed or wanted.

### **Environmental Coalition**

Concurrent with the deliberations of the Gunnison River Basin Stakeholder Group, a group of 10 conservation groups recommended that five stream segments within the D-E NCA be found suitable.

The recommended that three streams be found suitable, *with* full protection and recommendation to Congress for designation. These segments were: Rose Creek, Cottonwood Creek and Dry Fork of Escalante Creek (note that this segment is no longer considered eligible by the BLM). They also recommended that two river/creek segments be found suitable *without* the BLM recommending their designation to Congress: Gunnison River, Segment 3 and Escalante Creek, Segment 1.

### **3.4.4. Wilderness Study Areas**

In 1964, Congress passed the Wilderness Act, establishing a national system of lands for the purpose of preserving a representative sample of ecosystems in a natural condition for the benefit of future generations. Until 1976, most land considered for, and designated as, wilderness was managed by the NPS and USFS. With the passage of FLPMA in 1976, Congress directed the BLM to inventory, study, and recommend which lands under its administration should be designated wilderness. Through this process, one area in what is now the D-E NCA, Dominguez Canyon, was identified as a WSA. In 1991, the BLM issued a final wilderness study report that recommended 73,888 acres of the Dominguez Canyon WSA as suitable for inclusion in the National Wilderness Preservation System (see BLM 1989c).

In 2009, Congress acted on the BLM's recommendation and designated the Dominguez Canyon Wilderness. However, not all of the WSA lands were included in the Wilderness designation. As a result, 3,033 acres of WSA remain on the borders of what is now the Dominguez Canyon Wilderness (Map 3–36). Until Congress acts on the remaining acres and either designates them as wilderness or releases them for other uses, this area will be managed under **BLM Manual 6330, *Management of Wilderness Study Areas***

Under BLM Manual 6330, WSAs must be managed in a manner that would not impair the suitability of the area for preservation as wilderness and to prevent unnecessary or undue degradation. Except for grandfathered uses and valid existing rights, permitted activities in WSAs are temporary uses that create no new surface disturbance and do not involve placement of permanent structures.

Grazing is the only grandfathered use allowed in the WSA. Grazing is managed under three different permits (Gibbler Common, Wagon Park, and Dominguez). Under the current Grand Junction Field Office RMP, the WSA is closed to the public for motorized use. Motorized use

is authorized for grazing permittees in accordance with the BLM Manual 6330. Authorized motorized use is conducted in a manner and to a degree it was conducted prior to WSA designation. The WSA in the Grand Junction Field Office is designated as Visual Resource Management Class I. There is no VRM class designation for the WSA in the Uncompahgre Field Office.

### **3.4.5. Watchable Wildlife Areas**

The D-E NCA, and areas such as Dominguez Canyon, Unaweep Canyon and Escalante Canyon in particular, is already a popular area for people who enjoy watching wildlife. Wildlife were identified as a purpose for the designation of the D-E NCA in 2009, as was education.

Wildlife watching activities contribute roughly \$703 million toward Colorado's economy (\$1.2 billion if you count secondary impacts) and support about 12,800 jobs in Colorado, and 59 percent of the economic activity associated with watchable wildlife comes from non-Colorado residents (BBC Research and Consulting 2008).

In Escalante Canyon, the cliffs above the creek are home to desert bighorn sheep and peregrine falcon – among other species. Colorado is a participant in the national Watchable Wildlife program. Watchable Wildlife, Inc., is a 501(c)3 non-profit working with communities across North America and around the world to help protect wildlife and wild areas. Colorado has numerous sites that facilitate watching wildlife, but none are inside the D-E NCA.

## **3.5. Social and Economic Concerns**

### **3.5.1. Tribal Interests**

The BLM is required to consult with Native American tribes concerning the identification of cultural values, religious beliefs, and traditional practices of Native American people that may be affected by actions on Federal lands.

The BLM has developed several sets of guidelines for consulting with Native American groups and evaluating cultural resources, with an emphasis on traditional use values. The BLM, represented by field office managers and their employees, must consult with affected tribes to identify and consider their concerns in BLM land use planning and decision-making, and must document all consultation efforts (BLM 2004c).

#### **Tribal Outreach**

Traditionally, the Grand Junction and Uncompahgre Field Offices of the BLM have consulted with the following three federally recognized Ute tribes on specific projects and RMPs:

- Southern Ute Indian Tribe, based in Ignacio, Colorado
- Ute Mountain Ute Indian Tribe, based in Towaoc, Colorado
- Ute Indian Tribe (Uintah and Ouray Reservation), based in Fort Duchesne, Utah

All three of the above listed tribes were formally invited to become cooperating agencies during RMP development for the D-E NCA. None of the three tribes have signed memoranda of

understanding with the BLM to become formal cooperating agencies during the development of the D-E NCA RMP.

In 2007, the BLM initiated the Ute Ethnohistory Project. This project actively involved Ute Cultural Resource staff and traditional leaders in the identification of issues and concerns for resource management plans (RMPs) for the BLM's Grand Junction and Uncompahgre Field Offices, as well as for the Dominguez-Escalante D-E NCA. Through this project, the BLM understands that the Ute tribes consider the D-E NCA as part of their ancestral homeland. For a more thorough description of the Ute Ethnohistory Project, see the cultural resource section of this document.

One of the outcomes of these consultations was a recommendation that the BLM engage a wider number of tribes in order to gauge their interest in ongoing NEPA and RMP development. As a result, BLM staff from the D-E NCA and Grand Junction Field Office sent letters to the tribes listed in Table 3.44. Prior to March 7, 2011, the BLM did not receive feedback suggesting these tribes would like to be actively engaged in ongoing NEPA or RMP development for the Grand Junction Field Office or Dominguez-Escalante D-E NCA. Table 3.44 below shows the tribes contacted during the RMP process.

**Table 3.44. Additional Tribes Engaged During RMP Development for the D-E NCA and Grand Junction Field Office**

Organization	City	State
Comanche Nation of Oklahoma	Lawton	OK
Eastern Shoshone Tribe	Fort Washakie	WY
Hopi Tribe	Kykotsmovi	AZ
Jicarilla Apache Nation	Dulce	NM
Kiowa Tribe of Oklahoma	Carnegie	OK
Navajo Nation	Window Rock	AZ
Ohkay Owingeh (Pueblo of San Juan)	San Juan	NM
Paiute Indian Tribe of Utah	Cedar City	UT
Pueblo de Cochiti	Cochiti	NM
Pueblo of Pojoaque	Santa Fe	NM
Pueblo of Santa Ana	Santa Ana Pueblo	NM
San Ildefonso Pueblo	Santa Fe	NM
Santa Clara Pueblo	Espanola	NM
Shoshone-Bannock Tribes	Fort Hall	ID
Standing Rock Sioux Tribe	Fort Yates	ND

During the planning process for the Draft RMP, the BLM initiated formal tribal consultations with the Ute Indian Tribe (Uintah and Ouray Reservation) (UIT), the Ute Mountain Ute Indian Tribe (UMIT), and the Southern Ute Indian Tribe (SUIT). The BLM completed formal consultations with the tribal councils of two of these three tribes, and the BLM continues ongoing consultations with tribal historic preservation offices of all three of these tribes. The Draft RMP was also provided to all three tribal governments and tribal historic preservation offices prior to its release to the general public in order to provide an opportunity for their input. Tribal face-to-face consultation dates for the D-E NCA RMP were as follows:

- UMUT THPO: 2/7/2012; 5/7/2013; 4/28/2014; 10/13/2014
- UMUT Council: 3/13/2012
- UIT Council: 6/5/2013

- UIT Cultural Staff: 4/28/2014; 10/13/2014
- SUIT Council: 7/31/2013
- SUIT Cultural Staff: 4/28/2014; 10/13/2014

On 5/22/2013, letters were sent to the Ute Tribal Councils asking for comments on the D-E NCA RMP. In 2014, the Jemez Pueblo contacted the BLM Director about being involved with lands where the Fremont were present. The BLM will initiate consultation with them in 2015.

## **Tribal Interests**

Places of traditional cultural importance to Native American people may include the following:

- Locations associated with traditional beliefs (such as tribal and human origins, oral tales and tribal history, religious and ceremonial practices, and past or present significance and use)
- Ancestral habitation and burial sites
- Trails
- Areas where food, mineral, and water resources possessing healing attributes or used for subsistence may be obtained.

Some of these locations may also be regarded as sacred by particular Native American tribes or individuals. Under the framework of existing laws (including the NHPA, the American Indian Religious Freedom Act of 1978, Executive Order 13007, Indian Sacred Sites, and the Native American Graves Protection and Repatriation Act of 1990), the BLM takes into account the effects of federally linked projects or land uses on these types of locations.

To date, one of the major issues emerging from the Ethnohistory Project is the conservation of “heritage landscapes,” which are large areas that embody not only physical cultural sites, but also natural environmental conditions that have remained relatively unaffected by change over the last 100 years. These landscapes could be used by Ute tribal members for field workshops and resource gathering areas. Information learned from the Ute Ethnohistory Project will continue to inform the D-E NCA planning process and encouraged better consultation with Native Americans who may have an interest in lands managed by the D-E NCA.

### **3.5.2. Public Safety**

Public safety and law enforcement management in the D-E NCA consists of six principal activities: addressing hazardous materials, enforcing Colorado and Federal codes in the event of criminal actions, enforcing Colorado codes regarding terrestrial and aquatic wildlife, fire protection and investigation, emergency medical response, and search and rescue (SAR).

The principal risks to users of the D-E NCA include accidents with recreational vehicles, rafting/boating accidents on the Gunnison River, firearm accidents, and getting lost in remote areas.

## Resources

The six principal activities for public safety and law enforcement within the D-E NCA management are generally carried out by law enforcement personnel for the BLM. Additionally, cooperative agreements between the BLM and local, State, and other Federal agencies ensure that adequate personnel can be placed in the field, in the vicinity of the D-E NCA.

The BLM has entered into memoranda of understanding with the Colorado State Highway Patrol, the United States Forest Service (Region 2), and the sheriff department of Mesa County. Department of the Interior law enforcement officers have an interagency agreement allowing law enforcement officers the ability to enforce applicable laws and regulations between the various agencies. Law enforcement agencies for the National Parks or U.S. Fish and Wildlife can also provide backup.

During incidents where additional personnel are required, respondents can be requested from the USFS, the National Park Service (NPS), the Federal Bureau of Investigation (FBI), Immigration and Customs Enforcement (ICE), the U.S. Marshal Service (USMS), the Colorado State Patrol, the CPW, and the Mesa County, Delta County and Montrose County sheriffs' offices.

At any given time, the BLM has approximately 14 uniformed law enforcement officers and four special agents in the State of Colorado, five of whom are typically based within a 90-mile radius of the D-E NCA.

Uniformed law enforcement officers stationed within 90 miles of the D-E NCA are located in the Grand Junction Field Office (Grand Junction, CO), Uncompahgre Field Office (Montrose, CO), and Colorado River Valley Office (Silt, CO). Uniformed law enforcement further afield are located in the Little Snake Field Office (Craig, CO), White River Field Office (Meeker, CO), Royal Gorge Field Office (Canon City, CO), Kremmling Field Office (Kremmling, CO), San Juan Public Land Center (Durango, CO), and San Luis Public Lands Center (Alamosa, CO). In addition, there are at least four special agents in the State of Colorado, one of which currently operates out of the Grand Junction Field Office. These agents oversee and provide assistance on felony or long-term case investigations.

## Hazardous Materials

No hazardous waste sites have been identified either within or directly adjacent to the D-E NCA. However, of particular concern within the D-E NCA is the Gunnison River corridor and the Union Pacific Railroad right-of-way following the Gunnison River from Delta, Colorado to the confluence with the Colorado River at Grand Junction. Although infrequent, train derailments have occurred. Due to the isolated nature of the river corridor and the potential for large quantities of spilled materials, train derailments have the potential for major, negative environmental consequences. In these instances, numerous emergency response resources would be called in. Most of the traffic on this route involves coal trains and derailments have so far had little effect on the river.

Hazardous material incident response on public lands within the D-E NCA is governed by a series of emergency response plans. The Grand Junction Field Office and Uncompahgre Field Office oil and hazardous materials incident contingency plans direct BLM efforts. Depending on the nature and size of the incident, additional plans and agencies may be involved, including Mesa County, Delta County, and Montrose County emergency response plans, and the EPA's

Gunnison River Sub-Area contingency plan (EPA 2001). All political jurisdictions in Colorado (counties, cities, and towns) are required by State law to have a designated emergency response authority (DERA) to respond to hazardous materials emergency incidents occurring within their borders. The Grand Junction Fire Department is the DERA for the unincorporated areas of Mesa County, and the Montrose Sheriff is the DERA for the unincorporated areas of Montrose County. BLM participation in emergency incident response is coordinated with these authorities. Non-emergency incident response on public lands within these jurisdictions may or may not involve these agencies.

## **Abandoned Mine Lands**

The BLM's Abandoned Mine Lands Program enhances public safety and improves water quality by reducing or eliminating the effects of past hard rock mining in the western United States. The BLM has completed inventories of abandoned mine land sites throughout the D-E NCA. As of 2012, 17 such sites have been found within the D-E NCA, including three sites within the Wilderness. The largest concentration of such sites is within Unaweep Canyon along the northwestern boundary of the D-E NCA. As of 2012, all 17 of these sites have been reclaimed. If additional sites are identified, they will be targeted for reclamation.

## **Fish and Wildlife**

CPW is the government agency responsible for issuing hunting permits and enforcing State codes addressing terrestrial and aquatic wildlife species that inhabit the D-E NCA. All CPW officers are Level 1 peace officers in Colorado, which allows them to take action on BLM land if they encounter a violation. Under an MOU between the BLM and the CPW, BLM law enforcement officers in Colorado are granted a Level 2 peace officer commission with the State of Colorado, granting BLM officers the authority to help the CPW enforce State codes. In accordance with CPW policy, however, enforcement under this commission is limited to fish and game violations.

## **Fire**

Fire protection in the D-E NCA is provided by the combination of resources from the Grand Junction and Uncompahgre Field Offices. In addition, fire departments are located in each town in the vicinity of the D-E NCA. Response in shared responsibility areas is defined in the series of cooperative agreements laid out by the USDA and DOI, National Interagency Fire Center (BLM and NPS 2012; U.S. Department of the Interior and USDA 2012).

## **Search and Rescue**

Search and rescue (SAR) operations are ultimately the responsibility of Mesa, Delta and Montrose Counties. BLM law enforcement closely coordinates with SAR operations. At present, there are four SAR teams composed of volunteers available for response in the D-E NCA: Mesa County Search and Rescue, Montrose County Sheriff's Posse, ESAR Post 303, and Delta County SAR.

## **Current Trends**

Changing demographics and increasing local population levels will result in changing requirements for emergency services, principally in areas adjacent to the D-E NCA, but also in



the D-E NCA. It is expected that the combination of a growing local population and awareness of the D-E NCA will result in an increasing number of visitors. With increased visitation, the number of incidents requiring police and emergency response will likely also increase.

### **3.5.3. Social and Economic Conditions**

Certain defining features of every area influence and shape the nature of local economic and social activity. Among these are the local populations, the presence of or proximity to large cities or regional population centers, types of long-standing industries such as agriculture, oil and gas, predominant land and water features, and unique area amenities. The D-E NCA operates as a steward of many of these area resources and opportunities and thus plays a role in the community. This discussion gives further insight on the character and extent of these community connections.

The economic analysis examines how use of BLM lands within the D-E NCA affect surrounding communities, using 2012 use data as the baseline. Some uses, such as livestock and recreation, stimulate economic activity and support employment opportunities. In addition to economic contributions stemming from the direct use of these lands, counties containing Federal lands also receive payments from the Federal Government, which help fund public infrastructure and human services. While economic contributions may illustrate the economic importance of the DE-NCA, these values do not include non-market values for the natural resources and outdoor experiences provided by the NCA. Non-market goods such as unique ecosystems and habitats generate value that people can benefit from but do not necessarily pay for. Other goods such as outdoor recreation and scenery are valued by the people who use them, but only a portion of this value is represented in market purchases.

#### **D-E NCA Social and Economic Analysis Area**

In order to accurately portray the relationship of current BLM management to the community, the social and economic geographic scope of analysis must be defined. The social and economic effects from changes on BLM lands extend beyond the immediate vicinity of their location in the D-E NCA. In addition, the role of these lands within the larger region must be addressed while not masking change within smaller counties and communities in the analysis area. A multidimensional approach is thus appropriate examining both the role of the D-E NCA lands at a regional scale and at a smaller, county-level scale. Consequently, social and economic conditions and trends are presented for the three-county area surrounding the D-E NCA (Delta, Mesa, and Montrose Counties) and for individual counties (Map 3–37).

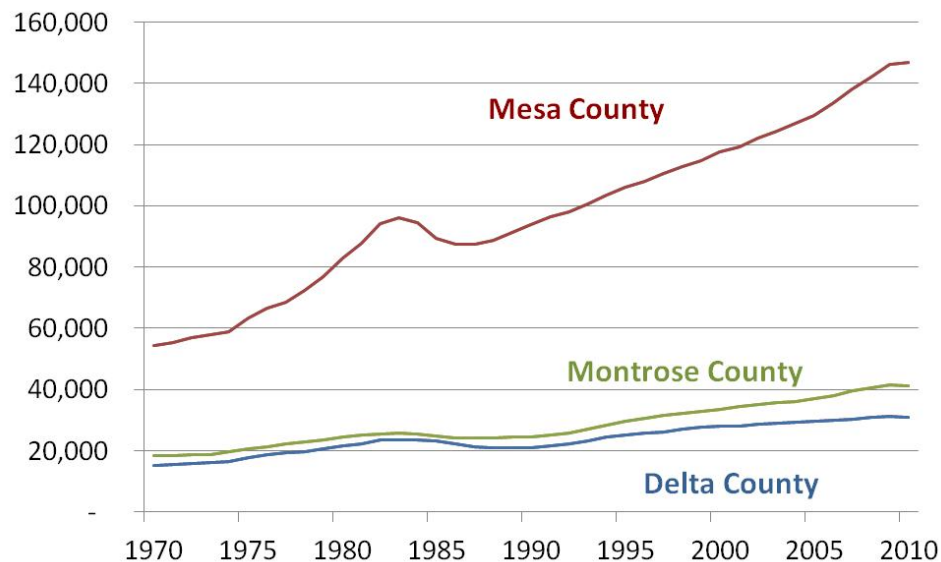
#### **Urban/Rural Mix and Land Management**

Mesa County's population can be characterized as urbanized with 87 percent of its population living in an urban setting and 13 percent living in rural areas. Montrose County has 55 percent of its residents living in an urban setting and 45 percent in rural areas. Delta County has 37 percent of its residents in urban areas and 63 percent living in rural areas (U.S. Department of Commerce 2010).

Federal lands are a major presence in the three-county area (68 percent of all lands), compared to private lands (31 percent), and State lands (1 percent). The BLM manages 1,808,460 surface acres (63 percent of Federal lands) in the three-county area, of which 210,172 acres are within the D-E NCA (12 percent of BLM land in the three-county area).

## Population and Demographic Change

Thanks to a recent energy boom and amenity seekers, the region has experienced population gains over the last two decades. Delta grew by 46.1 percent from 1990 to 2010, while Mesa and Montrose Counties grew by 64.0 and 68.4 percent, respectively. Over this period, the three-county area grew by 61.8 percent—well over the national growth rate of 26.0 percent and over the State rate of 59.2 percent. Over previous decades, population change was not always positive. Between 1983 and 1990, Delta, Mesa, and Montrose Counties decreased by 10.4, 2.3 and 5.5 percent, respectively, while the entire three-county area shrank by 4.2 percent (see Figure 3.6 below) (U.S. Department of Commerce 2011a).



**Figure 3.6. Population Growth In the Three-County Area**

Between 1990 and 2000, age groups between 35 and 85, which include the baby boomer population, showed increases in their share of total population. The age group that increased the most was 45 to 49, which rose by 5,903 persons. Those aged 30 to 34 showed the largest decreases, decreasing by 933 persons (U.S. Department of Commerce 1990, 2000). Increases over this period mask changes and stagnation over a smaller period in years between 1990 and 2000. For example, information obtained during scoping and other public involvement efforts for this RMP suggests many baby boomers found it difficult to move to the area because of high-priced homes during the area energy boom.

The 2010 census indicated that the racial composition of the three-county region was much less diverse than overall State and national populations, with nearly 89 percent of residents identifying themselves as non-Hispanic white alone. Although county shares of several racial and ethnic groups are below State and national shares, individuals identifying themselves as American Indian and Alaska Native in the three-county area were proportionately represented within these counties as they are in State and national populations. The percentage of local residents identifying themselves as some other race or of Hispanic origin was greater in Montrose County than at the national level, but it was not meaningfully different from the State percentage (Table 3.45). Note that race and ethnicity are separated, as Hispanic people can be of any race.

**Table 3.45. Racial and Hispanic Composition of 2010 Population**

Location	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic Origin
United States	72.4%	12.6%	0.9%	4.8%	0.2%	6.2%	2.9%	16.3%
Colorado	81.3%	4.0%	1.1%	2.8%	0.1%	7.2%	3.4%	20.7%
Three-County Area	88.9%	0.6%	1.0%	0.7%	0.1%	6.1%	2.6%	14.6%
Delta County	89.7%	0.5%	1.0%	0.5%	0.0%	6.0%	2.3%	14.0%
Mesa County	89.4%	0.6%	1.1%	0.8%	0.1%	5.4%	2.7%	13.3%
Montrose County	86.7%	0.4%	1.1%	0.6%	0.1%	8.7%	2.4%	19.7%
<i>Source: U.S. Department of Commerce 2011b</i>								

### Economic Specialization and Employment

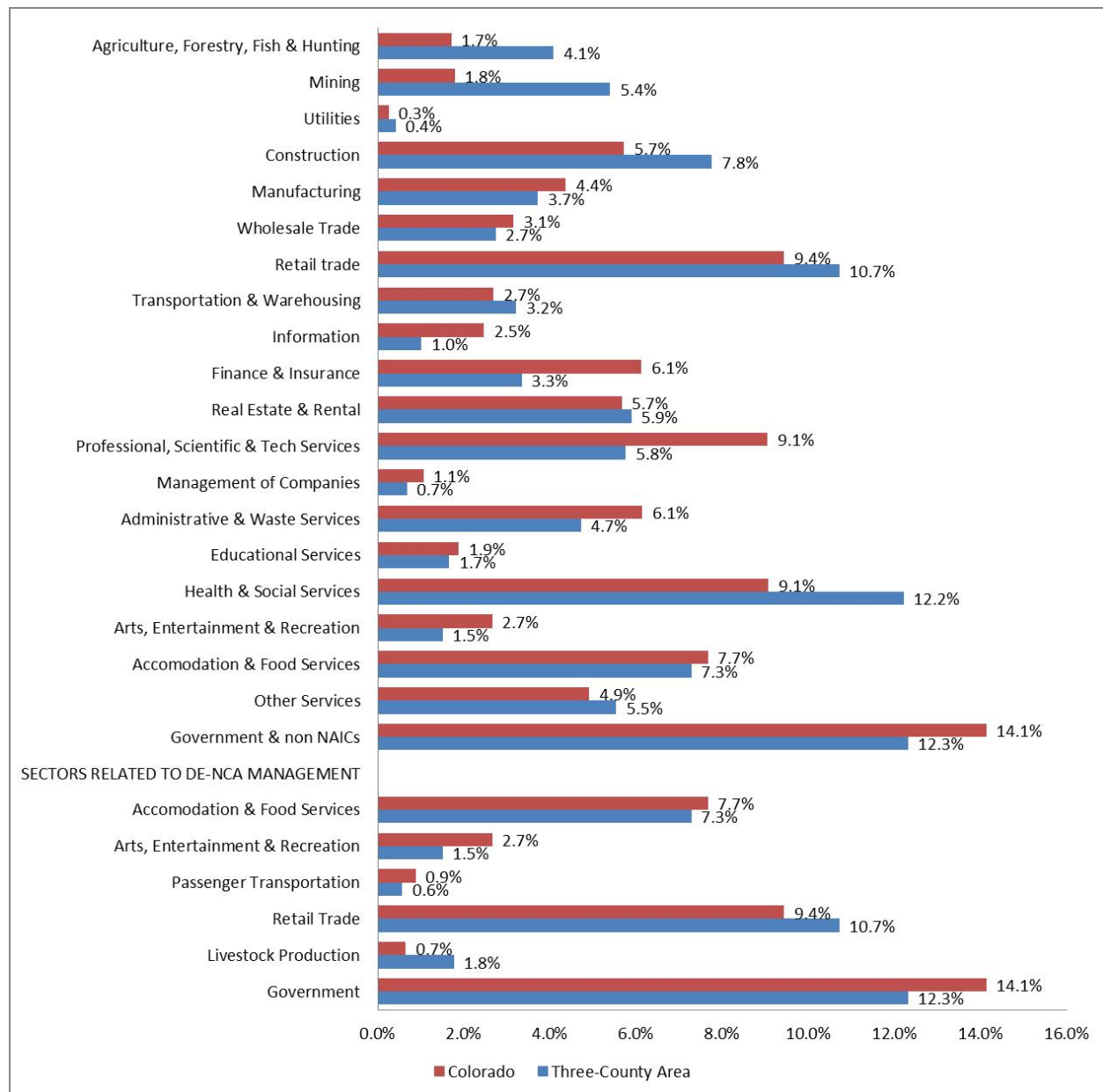
Total employment within the three-county region is distributed among a range of industry sectors and is shown below in Figure 3.7 (MIG 2012). Of particular interest is employment in sectors related to D-E NCA management seen in the bottom six categories of Figure 3.7. D-E NCA management is not attributable to all employment in these sectors but rather to smaller portions that are examined later in this document (see section on Contributions to the Area from D-E NCA Management).

Information on employment is used to examine specialization in particular sectors of the three-county region. Identification of employment specialization within the project area counties provides a frame of reference for contributions from BLM management examined later in this document (see section on Contributions to the Area from D-E NCA Management). Specialization is examined using the ratio of the percent employment in each industry in the region of interest (three-county area) to the percent of employment in that industry for a larger reference region (the State of Colorado). For a given industry, when the percent employment in the analysis region is greater than in the reference region, local employment specialization exists in that industry (ICBEMP 1998).

Of particular interest are counties where specialization occurs within the industries related to D-E NCA management seen in the bottom six categories of Figure 3.7. The government sector includes all Federal, State and local employment, whereas the grazing sector includes both cattle and sheep ranching. The last four sectors are all specifically attributable to tourism and recreation (Marcouiller and Xia 2008). It should be noted that the contributions from the D-E NCA represent only a portion of the economic activity reflected in industry sectors seen in Figure 3.7. Contributions to area employment from D-E NCA management are discussed below in the section entitled “Contribution to the Area from D-E NCA Management.”

Applying this criterion to 2012 data shows that the local economy surrounding the project area is specialized with respect to the Health Care and Social Service sector, the Mining sector, and the Agriculture, Forestry, Fish and Hunting sector. Local employment is more concentrated in these

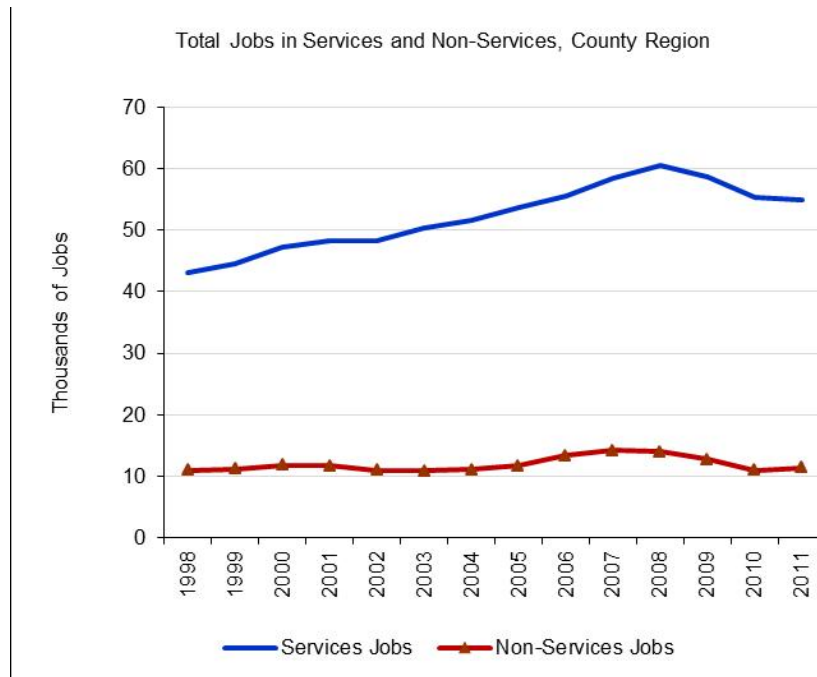
sectors than at the State level. Shares of total employment in these sectors were 3.6, 3.1, and 2.4 percent higher, respectively, than their shares of total State employment (MIG 2012).



**Figure 3.7. Analysis Area Employment Distribution, 2012**

Between 1998 and 2011 total employment in the three-county area increased from 54,024 to 66,311 jobs. Much of this growth is attributable to the employment in service-related jobs shown in Figure 3.8 below, where total employment in the project area counties is disaggregated into two broad industry groupings: service-related sectors and non-service-related sectors. Service-related sectors consist of the following: Utilities; Wholesale Trade; Retail Trade; Transportation and Warehousing; Finance and Insurance; Real Estate, Rental and Leasing; Professional, Scientific, and Technical; Management of Companies and Enterprises; Administrative and Support Services; Educational Services; Health Care and Social Assistance; Arts, Entertainment, and Recreation; Accommodation and Food Services; and Other Services. Non-service-related sectors consist of

the following: Mining; Construction; Manufacturing; and Agriculture, Forestry, Fishing, and Hunting (U.S. Department of Commerce 2012). The numbers in Figure 3.8 are not directly comparable to the IMPLAN numbers in Figure 3.7, because IMPLAN data include government, farm, and proprietor employment in addition to wage and salary employment. The IMPLAN data also include estimates for nondisclosures that similarly include farm and proprietor employment in addition to wage and salary employment.



**Figure 3.8. Service and Non-Service Employment History**

From 1998 to 2001, employment in service-related sectors as a share of total employment increased from 79.7 to 82.7 percent, and employment in the non-service-related sectors as a share of total employment remained relatively constant—slightly decreasing from 20.3 to 17.3 percent (U.S. Department of Commerce 2012). The large share of regional employment supported by these industries highlights the importance of service-related sectors to the local economy.

### Economic Well-being and Poverty

As noted above, the service-related sectors showed increases in their share of total employment, but the non-service-related sectors experienced decreases in their shares of total employment. In general, the service-related sectors do not pay as much as the non-service sectors, thus increases in the percent of total employment attributable to service-related sectors could decrease area economic well-being. In 2010, within the three-county area, the service- and non-service-related sectors paid average annual wages of \$32,051 and \$46,396, respectively (U.S. Department of Labor 2010). Thus, increases in employment in sectors associated with lower wages alongside decreases in sectors associated with higher wages could result in a decrease in area economic well-being. However, it cannot be said that decreases in economic well-being resulted from increases in service-related sector employment, since higher labor force participation in the service-related sectors, by groups such as women and minorities, could increase the overall importance of certain sectors over others. In addition, people might move to the area to take a service-related job but accept a lower wage, because being there allows them to take advantage of

the unique natural and cultural amenities. In this manner, some may benefit from a “secondary income” not provided by their place of employment but by the benefits they gain from living in the area. Population and employment changes are related to natural amenities (Knapp and Graves 1989; Clark and Hunter 1992; Treyz, Rickman, Hunt, and Greenwood 1993; Mueser and Graves 1995; McGranahan 1999; Lewis, Hunt, and Plantinga 2002), which are often provided by public lands. The D-E NCA operates as a steward of many of these natural amenities and consequently supports a portion of area population and employment growth.

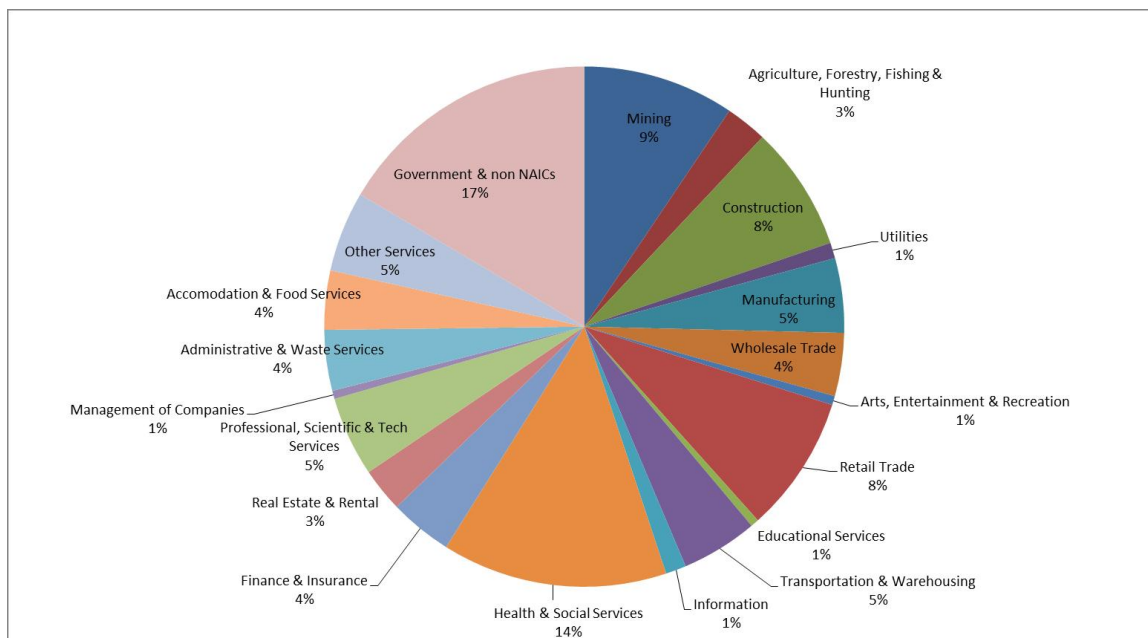
Total personal income (TPI) and per capita personal income (PCPI) are useful measures of economic well-being. From 1970 to 2009, annual TPI in the economic analysis area increased from \$1.6 billion to \$7.4 billion, and annual PCPI increased from \$18,309 to \$33,745 (all measures adjusted for inflation to 2010 dollars). This translates to a TPI increase of 358 percent and a PCPI increase of 84 percent over this time period (U.S. Department of Commerce 2011c). While PCPI is a useful measure of economic well-being it should be examined alongside changes in real earnings per job. Since PCPI includes income from 401(k) plans as well as other non-labor income sources like transfer payments, dividends, and rent, it is possible for per capita income to rise, even if the average wage per job declines over time. While PCPI rose between 1970 and 2009 by 84 percent, average earnings per job rose by 16 percent (from \$32,642 to \$37,936; values adjusted for inflation to 2010 dollars) (U.S. Department of Commerce 2011c). So while PCPI bounced back after job loss in the oil and gas industry in the early 80’s, real earnings per job have recovered more slowly. Alongside observed increases in non-labor income associated with the aging population discussed above, the changes in PCPI make sense.

From 1992 to 2000, average annual unemployment rates in the analysis area fell with national and State levels from 8.1 to 3.1 percent (U.S. Department of Labor 2011). Since 2000, unemployment has continued to follow State and national trends and rose to 10.5 percent in 2010. Since 2009, unemployment has fallen to 9.3 percent in August of 2011. New jobs created in an area are filled from two principal sources; local unemployment and in-migration. If unemployment remains high, new jobs are likely to be filled by local area residents, however if unemployment falls, new jobs could be filled more often by new area residents. Estimates of the share of people living under the poverty level in Delta, Mesa, and Montrose Counties was 13, 12.5 and 10.2 percent, respectively, in 2010, which was greater, equal, and less than the State share of 12.5 percent (U.S. Department of Commerce 2011d).

### **Components of Personal Income**

Further examining trends within personal income provides insight to the area economy and its connection to the D-E NCA lands. There are three major sources of personal income: 1) labor earnings or income from the workplace, 2) investment income, or income received by individuals in the form of rent, dividends, or interest earnings, and 3) transfer payment income or income received as Social Security, retirement and disability income or Medicare and Medicaid payments.

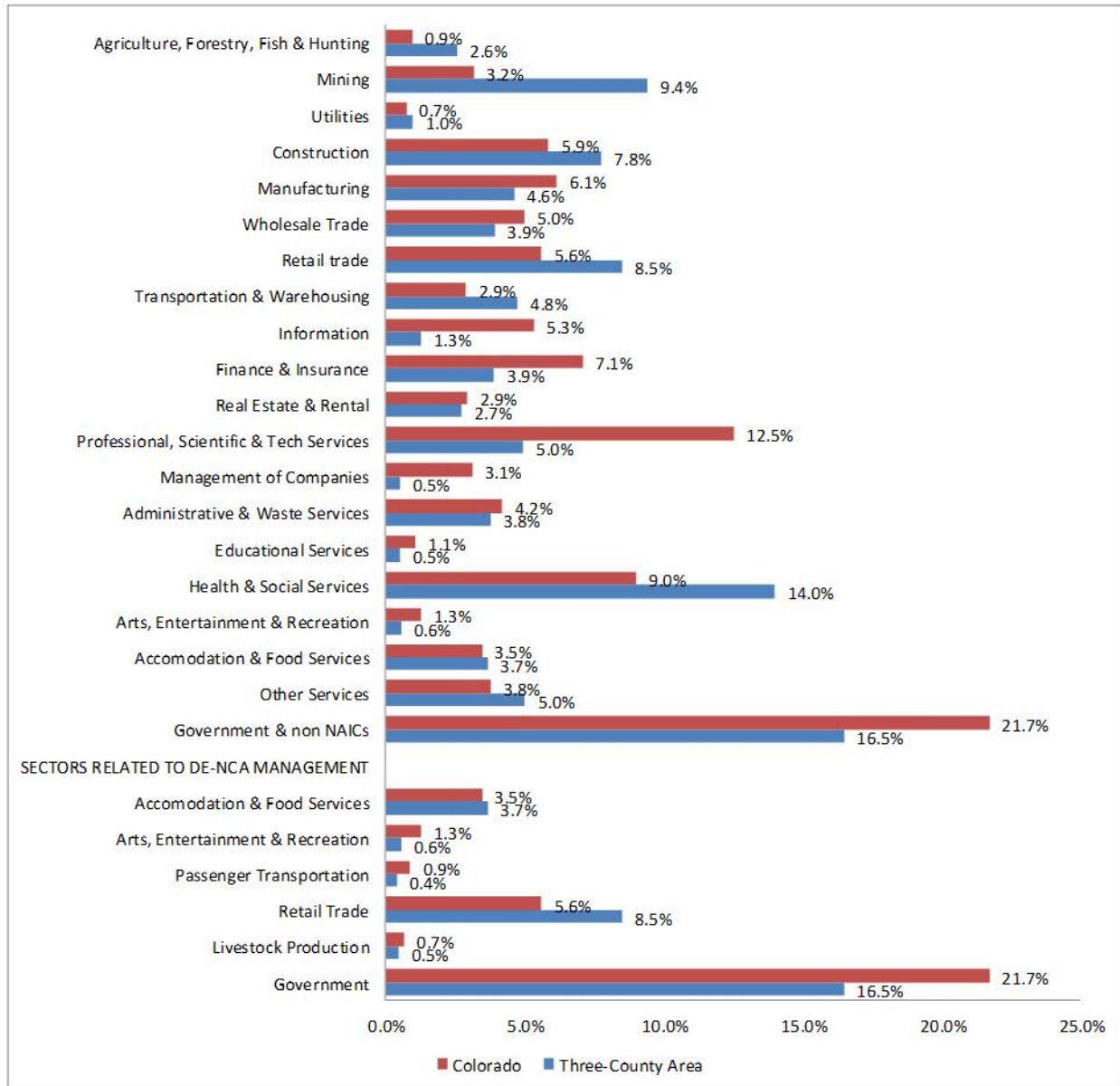
Labor earnings were the largest source of income in the three-county area, accounting for 58 percent of all income in 2012. The Government and Health Care and Social Assistance sectors were the largest components of labor income in 2012 in the three-county area (Figure 3.9 below). As discussed earlier, management of D-E NCA resources directly supports employment and income in several sectors. It should be noted that the contributions from the D-E NCA represent only a portion of the economic activity in industry sectors shown in Figure 3.9 (MIG 2012).



Pie chart showing labor income distribution within the D-E NCA tri-county area. The sectors for grazing and recreation are shown below in Figure 3.10, Analysis Area Income Specialization (MIG 2012).

**Figure 3.9. Three-County Area Labor Income Distribution, 2012**





**Figure 3.10. Analysis Area Income Specialization, 2012**

Labor earning's share of TPI decreased during the period from 1970 to 2013 (from 70.1 to 57.1 percent), while the share of non-labor income rose (from 29.9 to 42.9 percent). As a share of TPI, investment income and transfer payments rose from 17.3 to 22.5 and 12.7 to 20.5 percent, respectively, over this time period. Although transfer payments' share of TPI rose during this period, the data indicate that this increase was only slightly due to increases in income maintenance payments related to welfare or unemployment. As a share of total transfer payments, income maintenance decreased from 16.5 to 8.9 percent, while the share of age-related transfer payments in the form of retirement, disability insurance, and Medicare increased from 50.6 to 59.8 percent (U.S. Department of Commerce 2014a).

These patterns reflect the importance of older adults noted above, who are more likely to have investment earnings than younger adults. As the population of the area continues to age, the share



of income from these non-labor sources should continue to rise as long as residents continue to stay in the area after retirement or new retirees move in. As noted above, the development of rural recreation and retirement-destination areas are related to natural amenities (Knapp and Graves 1989; Clark and Hunter 1992; Treyz, Rickman, Hunt, and Greenwood 1993; Mueser and Graves 1995; McGranahan 1999; Lewis, Hunt, and Plantinga 2002), which are often provided by public lands. The D-E NCA provides many of these natural amenities and consequently supports a portion of non-labor income.

## **Contributions to the Area from D-E NCA Management**

D-E NCA lands contribute to the livelihoods of area residents in the three-county area through various uses by area communities, as well as through market-based economic production and income generation. Public lands provide products of value to households at no or low cost such as recreation opportunities and livestock grazing. Additional products with traditional cultural value may include fish, game, plants, berries, and seeds. Use of these products is often part of traditions that sustain local culture.

Contributions to the area economy through market based production can be measured using the IMPLAN input-output model. Input-output models describe commodity flows from producers to intermediate and final consumers. The total industry purchases are equal to the value of the commodities produced. Industries producing goods and services for final demand purchase goods and services from other producers. These other producers, in turn, purchase goods and services. This buying of goods and services continues until leakages from the region stop the cycle. The resulting sets of multipliers describe the change of output for regional industries caused by a change in final demand in an industry. The IMPLAN database describes the economy in 440 sectors using Federal data from 2012. These sectors are further aggregated above (see Figures 3.6 to 3.10 above) to better identify areas relevant to D-E NCA management activities. Note that IMPLAN data are derived from a variety of sources, including the Bureau of Economic Analysis, the Regional Economic Information System, the Bureau of Labor Statistics, and the U.S. Census.

Using the most recent data available, the IMPLAN model was applied to D-E NCA outputs and expenditures (discussed below) to estimate the economic contribution of the D-E NCA within the three-county area. Although the discussion above examines the current situation, this analysis examines the linkages and interdependencies among businesses, consumers, and D-E NCA resources on which some area economic activity depends. IMPLAN allows a more complete examination of these linkages.

IMPLAN not only examines the direct contributions from the three-county area but also indirect and induced contributions. Indirect employment and labor income contributions occur when a sector purchases supplies and services from other industries in order to produce their product. Induced contributions are the employment and labor income generated as a result of spending new household income generated by direct and indirect employment. The employment estimates are for any part-time, seasonal, or full-time job. In Table 3.46 and Table 4.63, direct, indirect, and induced contributions are included in the estimated D-E NCA contributions.

**Table 3.46. Estimated Annual Total (Direct, Indirect, and Induced) Employment and Labor Income Contributions from D-E NCA Management**

Resource Program	Jobs (Full- and Part-time)	Labor Income (in Thousands of 2012 Dollars)
Non-Local Recreation	45	1,296
Local Recreation	23	767
Grazing	32	583
Payments to Counties	0	2
BLM Expenditures	11	563
Externally Funded Management	5	142
<b>Total D-E NCA Management</b>	<b>117</b>	<b>3,354</b>

*Note: Jobs reported from IMPLAN are an annual average and are not full-time equivalents. These estimates measure the number of jobs per year supported by D-E NCA management and include all full-time, part-time, and temporary positions. Thus a job can be interpreted as 1 job lasting 12 months = 2 jobs lasting 6 months each = 3 jobs lasting 4 months, etc. Although IMPLAN provides a means by which changes in employment stemming from D-E NCA management can be measured, IMPLAN data cannot determine the number of hours worked, the relative percentage of full-time to part-time employment, or the number of local employees associated with these job-years.*

*Source: MIG 2012*

## Tourism and Recreation

The three-county planning area is well known for supporting a variety of highly regarded recreational experiences. Outdoor recreation and access to public lands have been attributed with attracting and sustaining families and businesses, creating healthy communities, and fostering a more enjoyable life. The abundance of opportunities for primitive, motorized, and wildlife-related recreation has made the three-county planning area an increasing desirable place to live, work, and visit. Although opportunities for outdoor recreation exist on private lands, the majority of land within Delta, Mesa, and Montrose Counties is managed as public lands. Federal public lands account for 69 percent of all lands within these three counties, nearly half of which are administered by the BLM. Although the D-E NCA accounts for less than 20 percent of BLM lands within the three-county area, it supports many cultural, historic, and recreational experiences unique to the Uncompahgre Plateau.

The undeveloped lands of the D-E NCA provide highly regarded outdoor experiences. Recreational opportunities supported by these lands include a wide array of primitive, mechanized, and motorized activities that have been attributed with attracting visitors and residents to the region. The D-E NCA's network of scenic trails is another highly valued feature of the NCA. These trails enable visitors to explore wild landscapes along Western Colorado's Uncompahgre Plateau while participating in a wide range of recreational activities. The NCA's trails accommodate travel and recreation by multiple kinds of trail user groups, making it a destination for hikers, mountain bikers, horseback riders, and off-highway vehicle (OHV) enthusiasts. The NCA's trails and open areas support numerous opportunities for off-highway vehicle recreation, including scenic driving, motorcycle riding, ATV riding, and 4x4 vehicle driving.

OHV recreation is one the most popular uses of the NCA and has been attributed with attracting motorized recreationists from near and far. In fiscal year 2012, the D-E NCA supported more than 16,000 visitor days (i.e., trips) for OHV recreation, with approximately 34 percent of all D-E NCA's visitors participating in some form of OHV recreation during their visit (BLM 2014). Although many OHV users live within the three-county study area, opportunities for OHV recreation on the D-E NCA have been attributed with attracting a large number of motorized users

who may not visit the area for other recreational experiences. These recreationists stimulate economic activity in nearby communities by purchasing food, gas, and lodging, and by renting equipment from local outfitters. In this manner, motorized recreation in the D-E NCA is partially responsible for attracting and retaining recreational spending in the three-county study area. In addition to the economic activity stimulated by OHV users in the D-E NCA, opportunities for motorized recreation in the NCA provide OHV users with personal benefits that contribute to their overall happiness and well-being. Although these non-monetary benefits are much harder to quantify than economic contributions to local economies, previous studies have examined the net benefits (benefits minus expenses) of recreational experiences on public lands. Loomis (2005) estimated that the monetary value of personal benefits received by motorized public land users was nearly \$28 per visit (see Appendix S for a more detailed explanation of non-market values and recreation values). The monetary value of personal benefits accrued to OHV users from motorized recreation in the D-E NCA exceeded \$1.29 million in fiscal year 2012.

Wildlife viewing is another very popular activity in the NCA. The D-E NCA has habitat suitable for 52 protected species of animals and plants, enabling a variety of wildlife to call the NCA home. Notable wildlife species in the NCA include mule deer, golden eagle, turkey, elk, mountain lion, black bear, the collared lizard, and desert bighorn sheep. The bighorn sheep is Colorado's state mammal and one of its most sought-after watchable wildlife species (George, Kahn, Miller, and Watkins 2009). These majestic animals are often seen along scenic roads through the Rocky Mountains, and the State has built several wildlife viewing areas to enable motorists to safely pull off to view them. The bighorn sheep viewing area near Georgetown, Colorado, had over 32,000 visitors, and its coin-operated telescopes generated \$8,000, during the first 11 months it was open (BLM 1995).

Bighorn sheep are also a highly sought-after big game species and North America's most coveted big game trophy. Within the big game hunting community, bighorn sheep have an additional, unique value associated with a hunter's recognition for harvesting a "grand slam." A grand slam refers to harvesting all races of North American thin-horn and bighorn sheep: Dall, Stone, Rocky Mountain (including California), and desert. As such, sheep tags are prized and very difficult to come by. In Colorado, residents and nonresidents can apply for hunting permits for Rocky Mountain and desert bighorn sheep. In 2014, applicants are required to pay an application fee of \$254 for residents and \$1,339--\$2,009 for nonresidents (<http://cpw.state.co.us/>). Interested hunters generally apply for many years since they must apply three times before they are eligible to draw a Rocky Mountain bighorn sheep tag, and chances of drawing a tag are not very favorable. Desert bighorn sheep tags are a once-in-a-lifetime lottery and only three ram tags are issued per year for unit S62, which includes the D-E NCA. Because hunters view sheep tags as the "tag of a lifetime," these tags have been known to go for thousands of dollars at annual auctions.

Auctioning bighorn hunting tags has raised hundreds of thousands of dollars for wildlife management and conservation. For example, at the annual Wild Sheep Foundation (WSF) banquet in 2003, auction prices for U.S. wild sheep tags ranged from \$40,000 (Wyoming tag) to \$132,500 (Montana tag). In 1997, the WSF sold an Alberta tag for \$405,000 (ODFW 2003). These amounts inflated to 2012 values are respectively \$50,018--\$165,686 and \$506,437. In addition to paying for the privilege to hunt bighorns, many hunters spend money on travel-related expenses and guided hunts. Though the economic value of Colorado bighorn sheep has not been studied or quantified, that big money hunters are willing to spend for the opportunity to hunt them reflects the high value hunters place on sheep and the economic importance of these unique hunting opportunities to rural communities.

. Over the past few years, demand for recreational experiences in the D-E NCA has steadily risen. Data collected by Colorado Mesa University (CMU) indicate that there were 98,850 recreational visits to the D-E NCA between April 2009 and July 2010 (CMU 2011). More recently, BLM's Recreation Management Information System (RMIS) reported that the D-E NCA supported 137,002 visits between October 1, 2012, and September 31, 2013 (BLM 2014). Approximately 55 percent of these visits were made by non-locals (whose zip code was 50 miles or greater from the D-E NCA), while local recreationists (those whose zip code was fewer than 50 miles away) accounted for the remaining 45 percent of visits. Day trips were the most common type of trip to the D-E NCA, accounting for more than half of all D-E NCA visits. A CMU study found approximately 41,030 non-local and 33,088 local day trips to the D-E NCA (CMU 2011). For a detailed explanation of the data and methodology used to estimate impacts of outdoor recreation on the D-E NCA, please see Appendix S, Economic Impact Analysis Methodology.

Recreational experiences supported by the D-E NCA contribute to the overall quality of life enjoyed by local residents and stimulate economic activity throughout the local economy. Recreational visitors to the D-E NCA spend money on food, gas, lodging, and other trip-related expenses. Although spending by D-E NCA visitors accounts for only a small portion of all recreation-related spending in the region, a portion of employment and income in the local tourism and recreation industry can be directly attributed to outdoor experiences in the D-E NCA. Visitor spending dollars also have a ripple effect in the local economy, stimulating additional employment opportunities in supporting industries. In total, recreational opportunities in the D-E NCA are estimated to support 68 total jobs and more than two million dollars in local labor income, with non-local recreation supporting 45 local jobs (direct, indirect and induced) and more than 1.2 million dollars in total labor income (direct, indirect, and induced) within the three-county area (see Table 3.46).

Estimates of employment associated with recreation include both full- and part-time jobs; thus one person could hold more than one job. Using national data on the number of proprietors and employees engaged in production by sector (U.S. Department of Commerce 2011d), employment in industries related to D-E NCA recreation was converted to the number of persons engaged in production. This conversion indicates approximately one person is engaged in production for every job associated with D-E NCA local and non-local recreation.

### **Livestock Grazing**

From 1970 to 2013, employment in the farm sector (including livestock grazing) increased by nearly 25 percent (from 3,770 to 4,622 jobs) but decreased as a share of total employment (from 10.4 to 3.8 percent) within the three-county region (U.S. Department of Commerce 2014b). Regardless of this decrease, ranching is still an important part of the history, culture, and economy of the three-county area. Grazing is allowed on BLM lands under the Taylor Grazing Act (43 U.S.C. 315) and FLPMA for the purpose of fostering economic development for private ranchers and ranching communities by providing ranchers access to additional forage. The Omnibus Act that created D-E NCA specifies that livestock grazing will continue to be managed the same inside the DE-NCA as it is on other public lands administered by the BLM.

Although some sheep graze in the D-E NCA, cattle are more prevalent. Livestock operations are primarily cow-calf operations. Most calves are born in late winter through spring on private lands. Cattle are turned out to graze as cow-calf pairs. Calves have historically been weaned in the fall and most leave the region to be grown out and/or fed in other parts of the country. Although D-E NCA's grazing potential has been estimated to be 16,515 AUMs annually, only 14,403

(11,759 cattle and 2,644 sheep) AUMs were allocated in 2010. Allocated grazing in D-E NCA is often restricted below its full potential because of factors such as drought, rangeland conditions, changes in active permit holders, financial limitations on operators and market conditions. Since records of actual grazing levels (AUMs) were unavailable, this analysis relied on the D-E NCA's records for past allocations. When 2012 cattle inventory allocations were compared to estimates of total inventories within the three-county area from the most recent agricultural census, D-E NCA's allocations were found to have provided less than 1 percent of the forage required to sustain the 131,667 cattle inventoried within the three-county area (USDA 2012).

Although this forage accounts for a relatively small portion of the total forage necessary to sustain livestock inventories in the three-county area, it fills a critical winter and spring niche that is likely more important on smaller geographic scales within the three-county area. Ranching operations in the three-county study area are mostly concentrated in smaller rural communities, which tend to be more economically dependent on agricultural production than the broader regional economy. While ranching communities are most likely to be directly affected by changes in the availability of Federal forage, the economic impacts of changes in Federal range management would be widespread, creating a ripple effect that affects economic activity in nearly every sector of the local economy.

In order to remain financially viable, most ranching enterprises have to maintain livestock herds larger than their private lands can support. Since their private lands are unable to meet the forage needs of these larger herds, most ranching operations lease public or other private lands for part of the year in order to gain access to additional forage. Although opportunities to lease private, Forest Service, and other BLM pastures within the study area exist, nearly all rangeland suitable for livestock grazing is currently being utilized. The limited ability and financial burden of securing forage to offset Federal forage losses would likely cause local ranchers to scale back operations and reduce herd sizes. Since herd reductions may threaten the financial viability of local ranching enterprises, Federal forage losses on D-E NCA could cause local ranchers to transition land and other ranch resources from livestock production to other agricultural uses or to abandon agricultural practices altogether. For this reason, stability of public land grazing on the D-E NCA is imperative to maintaining viable ranching operations in Delta, Mesa, and Montrose Counties.

Local ranchers who graze livestock on allotments within the amendment area pay Federal grazing fees. The annually determined grazing fee is computed by using a 1966 base value of \$1.23 per AUM for livestock grazing on public lands in Western States. The figure is then calculated according to three factors-current private grazing land lease rates, beef cattle prices, and the cost of livestock production. In effect, the fee rises, falls, or stays the same based on market conditions, with livestock operators paying more when conditions are better and less when conditions have declined. The formula used for calculating the grazing fee, which was established by Congress in the 1978 Public Rangelands Improvement Act, has continued under a presidential Executive order issued in 1986. Under that order, the grazing fee cannot fall below \$1.35 per AUM, and any increase or decrease cannot exceed 25 percent of the previous year's level.

Federal grazing fees have remained constant at the minimum \$1.35 per AUM for the past eight years. Relative to the statewide average of \$17.00 per AUM in 2012, Federal lands appear to be the least expensive grazing land available (USDA 2014). Grazing fees are only a small portion of the total cost of grazing on Federal public lands, however. In general, private rangeland conditions are better and provide ranchers with fences, roads, salt and water, and protection for livestock. On public lands, ranchers must provide these themselves. Once additional costs associated with grazing on public lands are factored in, the cost differential between public and private grazing

fees disappears. In many cases, the total cost of a public land AUM exceeds the total cost of a private land AUM (Rimbey and Torell 2011). Even though ranchers incur additional costs to graze on Federal lands, Federal grazing permits are coveted by ranchers. In addition to granting permit holders access to forage during a critical period of the year when forage on private hay fields and meadows is growing, Federal grazing permits add to the resale value of local ranches.

In 2012, livestock grazing on the DE-NCA generated more than \$19,000 (\$1.35 per AUM x 14,403 AUMs) in Federal revenue. Since the DE-NCA is located within a grazing district, 12.5 percent of Federal grazing fees collected from livestock grazing on the NCA is returned to the State of Colorado. All of this revenue is returned to the counties in which it was collected to fund range improvement projects.

In 2007 the statewide average AUM price for private land was \$14.70 (USDA 2009a). The BLM formula yielded a fee of \$1.35 per AUM in 2011, which is down from \$1.56 in 2006. This Federal land is the least expensive grazing land available, hence use and access is coveted by area ranchers even though additional costs are usually incurred to use these lands. Consequently, the benefit to area ranchers from BLM grazing cannot be assumed to be equal to the entire price difference between the competitive forage price and the BLM grazing fee. Regardless, additional value accrues to area ranchers above the price paid and additional costs described previously. A portion of this value is reflected in private property values for properties that have preference for permit or lease of BLM grazing allotments.

In addition to the value of forage supplied by the BLM, livestock grazing on BLM lands provides local area employment and income. Using the IMPLAN input-output model described above, estimates of BLM employment and income contributions are calculated from BLM allocated forage use in 2012. This number represents total employment and income from direct, indirect and induced contributions. In terms of local area contributions from BLM supplied forage, the D-E NCA allocated use levels of grazing support approximately 19 direct jobs and an additional 13 indirect and induced jobs and \$583,000 in total labor income (direct, indirect and induced) on an average annual basis (Table 3.46). Of the 32 total jobs and \$583,000 in labor income (direct, indirect and induced), eight jobs and \$139,000 in labor income can be attributed to sheep grazing on BLM lands within the D-E NCA.

While employment estimates may appear small, it must be noted that these employment and income estimates account for the portion attributable to use on BLM lands and not the entire job, thus multiple permittees could be included in the estimate of a single job. While BLM allotments often provide only a portion of a permittee's forage, these allotments provide an important complement to ranching operations that also occur on adjacent national forest and private land. Using national level data on the number of proprietors and employees engaged in production by sector (U.S. Department of Commerce 2011e), employment in industries related to D-E NCA grazing was converted to the number of persons engaged in production. This conversion indicates approximately three people are engaged in production for every two jobs associated with D-E NCA grazing.

Although livestock grazing is reported to have supported only a small portion of total employment within Delta, Mesa, and Montrose Counties in 2012, raising livestock is more of a tradition than a job to most ranchers. Most ranching families only obtain a small portion of their household income from livestock production. Many ranches are dependent upon one or more family members working off-ranch and continue to raise livestock, because the tradition is often deeply rooted in their personal history and identity. Livestock ownership and ranch life are powerful

forces that bind communities and families, and responsibility toward land and livestock are often enmeshed in family values. Continuing this way of life maintains traditional values and connects families to ancestral lands and heritage.

Public comments received during scoping and other public involvement efforts conducted in support of this RMP indicate concern that effects to foreign sheepherders need to be considered within this RMP. Concern was expressed that spending leakages of wages needs to be considered, as well as the disparate effects resulting from decreased sheep grazing within the D-E NCA. Consideration of spending occurring outside the impact area (internationally or domestically) is accounted for in the analysis of current contributions and effects using the IMPLAN data and modeling software (MIG 2012). While foreign sheepherders may be a component of area operations, it is unknown whether permittees operating on the D-E NCA depend on foreign workers. Regardless, the potential for disparate effects to these workers is examined in the environmental justice section of this EIS.

### Revenue Sharing

In 1976, Congress passed legislation to provide funding to counties through Payments in Lieu of Taxes (PILT) in order to compensate for tax revenues not received from Federal lands. These taxes would typically fund various services that are provided by counties (road maintenance, emergency services, and law enforcement). The PILT payments are determined using a formula that accounts for the county acreage of Federal land, county population, and the previous year's revenue sharing from resource uses on Federal land (timber, range, mining etc.). In November of 2008, additional payments were authorized by the Emergency Economic Stabilization Act of 2008 (Public Law 110-343). The law authorized counties to receive their full entitlement level payment from 2008 through 2012. Table 3.47 below depicts 2011 payments along with BLM entitlement acreage per county. The last row is the payment attributable to the share of BLM entitlement acreage from each county's total entitlement acreage.

**Table 3.47. PILT Entitlement Acreages and Payments by County**

	<b>Delta</b>	<b>Mesa</b>	<b>Montrose</b>	<b>Three-County Area</b>
<b>D-E NCA Entitlement Acreage</b>	59,718	119,958	30,315	209,991
<b>Total Federal Entitlement Acreage</b>	409,551	1,552,125	976,750	2,938,426
<b>D-E NCA Entitlement Acreage Share</b>	14.6%	7.6%	3.2%	7.1%
<b>2012 Total Payment</b>	\$139,109	\$1,578,211	\$2,104,418	\$3,821,738
<b>BLM Share of Payment</b>	\$20,310	\$119,944	\$67,341	\$271,343

*Source: U.S. Department of the Interior 2014*

In addition to PILT, counties receive a share of livestock revenues under the 1934 Taylor Grazing Act. Twelve and a half percent of Section 3 grazing permit fees are distributed back to counties where the livestock grazing authorization occurs, which amounts to about \$2,400 across the three-county area, based on allocated use levels and the \$1.35 per AUM grazing fee. Current PILT payments and grazing revenues attributable to the D-E NCA contribute less than 1 percent to total county revenues in the three-county analysis area (U.S. Department of Commerce 2009). Using the IMPLAN input-output model described above, estimates of employment and income contributions from D-E NCA PILT and grazing payments are calculated; these payments account for two total jobs (direct, indirect and induced) and \$84,000 in total labor income (direct, indirect, and induced) on an average annual basis.

## BLM Expenditures and Employment

D-E NCA management in the three-county area provides a direct contribution to the area economy by employing people who reside in the area and by spending dollars on project-related goods and services throughout the three-county area. The D-E NCA's annual budget is approximately \$537,000 and includes salary and non-salary expenditures. The D-E NCA is managed by seven full-time employees, and several other full-time BLM employees attribute part of their time to managing the NCA. These employees work out of the Grand Junction or Uncompahgre Field Offices, and most live within the three-county study area. In addition, project-related expenditures are attributable to BLM program areas listed in Table 3.46 of this section. The contributions from the specific resource programs listed in each respective row of Table 3.46 do not include these BLM expenditures. Thus, BLM expenditures accrue to the area in addition to contributions from livestock grazing and recreation presented above. Program related expenditures do not include expenditures associated with emergency fire suppression since these cannot be considered consistent contributions to the area economy. On an average annual basis, BLM expenditures and employment support 11 total jobs (direct, indirect, and induced) and \$563,000 in total labor income (direct, indirect, and induced) (Table 3.46).

## Externally Funded Management

A portion of the management activities occurring in the D-E NCA are conducted with funds not accounted for under BLM expenditure of their appropriated budget discussed above. These funds often come from external sources such as stewardship grants. Externally funded projects occurring in the D-E NCA generally include weed removal and other vegetation management activities, and total \$160,000.00 annually, on average. In addition, the BLM works with the community providing contracting opportunities and environmental education partnerships with the schools. As a result of these externally funded projects, five total jobs (direct, indirect, and induced) and \$142,000 in total labor income (direct, indirect, and induced) are supported in the three-county area economy on an average annual basis (Table 3.46).

## Non-Market Economic Value

Generally, the value of goods and services depends on the willingness of consumers to purchase them. Although prices are generally a good indicator of the value of goods and services regularly bought and sold in a market, markets do not exist for some resources. Many natural resources, such as recreational opportunities and environmental services, are characterized as non-market goods, because there are no traditional markets in which they can be bought and sold. Measuring the value of non-market resources is important, because without estimates, these resources may be implicitly undervalued, and decisions regarding their use may not accurately reflect their true value to society.

The value of non-market goods can be broken down into two categories: use and non-use. Use values for non-market goods are derived from the direct use or enjoyment of resources and reflect the benefits society receives from their use. Although the use of non-market goods often requires consumption of associated market goods, benefits received from non-market goods exceed the value of the money and time spent to use resources. There are non-market use values for outdoor recreational experiences in the D-E NCA associated with recreational activities such as hiking, bird watching, and OHV use. These non-market values reflect the value of those experiences to visitors beyond what they pay for travel, parking, food, and lodging in order to enjoy them.



Although economists have developed methods to quantify non-market values, many of these approaches are controversial and rely on site-specific data that are difficult to obtain during the planning process. Since site-specific data were unavailable, the BLM estimated net benefits associated with recreation on the D-E NCA by using a benefit transfer approach. Benefit transfer is the practice of applying estimates of economic value obtained from one or more original valuation studies to the evaluation of economic value in another recreational site by adaptively transferring available information (value estimates or estimated benefit/demand function) from existing primary studies.

The USFS developed recreation use values based on empirical research conducted in the United States from 1967 to 2003. These use values were estimated from more than 1,000 original or primary Contingent Valuation Method (CVM) or Travel Cost Method (TCM) studies and reflect the average net benefits (total benefits or satisfaction derived from a recreational experience minus all trip related expenses) for a variety of recreational activities. Applying recreation use values developed by the USFS to visitor use data for the D-E NCA provides a measure of the willingness of recreational users to pay for outdoor experiences currently supported by the NCA. Net benefits derived from recreation on these lands are estimated to exceed 5.7 million dollars. This is an estimate of the value of recreation to public land users and is not a measure of the value of recreation in the D-E NCA to the local economy.

In addition to non-market use values, non-use or passive-use values also exist for the D-E NCA's resources. These values reflect the value of resources beyond their current use and may include existence, option, and bequest values.

Existence values are the amount society is willing to pay to guarantee that an asset simply exists. An existence value for the D-E NCA might be the value of knowing that undisturbed native plant habitat exists or the value associated with undeveloped scenic landscapes. In addition to implicit existence values, society's willingness to pay to preserve resources for future use attaches additional passive use values. The potential benefits people would receive from future use are referred to as option values when future use is expected to occur within the same generation and bequest values when preservation allows future generations to benefit from resource use. Within the D-E NCA, bequest and option values might exist for numerous plant species, undeveloped scenic landscapes, wild and scenic rivers, heritage sites, and recreational trails.

Public comments received during scoping, public review of the draft document, and other public outreach efforts conducted in support of this RMP indicate that non-market values exist for recreational opportunities, for grazing as a land use having traditional and cultural importance, for educational tourism (henceforth also called edu-tourism) opportunities, and for other natural amenities. The characteristics of these non-market values are described in the section that follows: "Communities Interested in D-E NCA Management."

## **Communities Interested in D-E NCA Management**

Communities within the three-county analysis area can be described by where they live and by their connections to the local landscape. During the resource management planning process, members of the public shared insights with the BLM about these connections and about their interest in D-E NCA management. This information helped the BLM define community characteristics and values that are connected to D-E NCA management under this RMP.

The most critical impacts of Federal land management actions may occur in small, rural communities (Harris, McLaughlin, Brown, and Becker 2000). Consequently, geographically defined communities are important and relevant for assessing the social impacts of management actions. However, the geographically based community refers to physical or political boundaries and not to the relationships among people who reside within these boundaries. Brown and Duguid (1991) describe communities of interest (groups of people sharing a common goal) as “communities of communities.” Such concepts can provide unique insights about the linkages between people and public land that may transcend the geographically defined community. Public comments received during scoping, **Draft RMP review**, and other public outreach efforts conducted in support of this RMP indicate that communities of interest exist for individuals and groups interested in the following:

- Recreation and access
- Grazing as a traditionally and culturally important land use
- Edu-tourism opportunities
- Natural amenities and “amenity migration” (people moving to locations with desirable amenities)

Note that identified communities are not mutually exclusive; for example, individuals and groups interested in motorized recreational opportunities may also include individuals interested in wildlife and plant habitat.

### **Individuals and Groups Interested in Recreation and Access**

These individuals and groups are interested in access and opportunities for motorized and non-motorized recreation. Of particular concern are opportunities for activity participation, solitude, trail-based recreation, presence of naturally appearing landscapes and complimentary recreation activities such as edu-tourism (see discussion of edu-tourism community of interest below). Access for hikers was important to the public for areas noted as “rare and unique.” Indicators used to examine effects to recreationists are projected recreation visitation, acres designated as extensive recreation management areas (ERMAs) and special recreation management areas (SRMAs). Indicators used specifically to examine effects to motorized users in this community are miles of routes in areas designated as limited to designated routes, as well as the acreage of SRMAs designated specifically for motorized use.

### **Individuals and Groups Interested in Grazing as a Traditional and Culturally Important Land Use**

These individuals and groups are interested in the maintenance of D-E NCA grazing and associated values. Specifically they value the social and cultural importance grazing plays in area communities. Indicators used to examine effects on this community under the alternatives are projections of allocated AUMs and employment attributable to D-E NCA grazing.

### **Individuals and Groups Interested in Edu-tourism Opportunities**

These individuals and groups are interested in opportunities and facilities for education and tourism. Some see potential for business growth by offering tours and trips that feature D-E NCA natural, anthropological, paleontological, geological, historical and recreation opportunities. Others see opportunities for fostering landscape stewardship ethics through youth and community

education and participatory stewardship on D-E NCA lands. Indicators used to examine effects on this community under the alternatives are areas allocated for education and interpretative use and the BLM's collaborative strategy with the community.

### **Individuals and Groups Interested in Natural Amenities and Migration**

These individuals and groups are interested in social and non-market values associated with D-E NCA lands that encourage and maintain area population and business activity. Natural amenities and quality of life have been increasingly recognized as important factors in the economic prospects of many rural communities in the West (Rudzitis and Johnson 2000). Public comments received during scoping and other public involvement efforts conducted in support of this RMP indicated quality of life and natural amenities, often provided by the D-E NCA, attract residents to the area.

Information from the public also indicated that natural amenities and quality of life within the region have helped area businesses attract high-quality employees. Rural county population change, the development of rural recreation, and retirement-destination areas are all related to natural amenities (McGranahan 1999). Thus, designations that maintain and protect natural amenities and associated non-market values may similarly contribute to area economic activity and well-being. Indicators used to examine each alternative's effect on well-being and natural amenity induced economic activity within the three-county region include acres of D-E NCA land managed for visual resource protection, as ACECs, for wilderness characteristics, as watchable wildlife areas, and segments of rivers suitable for wild and scenic river classification.

Of particular importance was maintenance of a quality visitor experience for visitors and locals by providing a diversity of visitor experiences. Public comments received during scoping and other public involvement efforts also indicated interest in the BLM's approach to marketing; particularly balancing community identity and branding with the BLM's collaborative strategy. Consequently the BLM's collaborative strategy for the future under this RMP is also discussed in the section on effects to this community.

### **Environmental Justice**

Environmental justice refers to the fair treatment and meaningful involvement of people of minority races, ethnicities, and low incomes with respect to the development, implementation and enforcement of environmental laws, regulations, programs, and policies. Executive Order 12898 requires Federal agencies to "identify and address the disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

According to Executive Order 12898 and the Council on Environmental Quality's (CEQ's) environmental justice guidelines for NEPA (CEQ 1997), "minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis." As shown in Table 3.45, the share of those identifying themselves as some other race alone was greater in Montrose County than shares in the three-county area and the State. In addition the share of those identifying themselves as Hispanic was greater in Montrose County than the three-county area. Since populations of these minority groups can be considered "meaningfully greater than the minority population percentage in the general population or other appropriate

unit of geographic analysis,” the U.S. Census data suggest minority populations within the three-county area meet the CEQ’s environmental justice criterion.

CEQ guidance on identifying low-income populations states “agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.” The discussion above on poverty noted the share of those living below the poverty line was greater than the State in Delta County. Thus, the census data indicate low income populations, as defined by CEQ, exist within the three-county area.

Although foreign sheepherders are generally not considered residents, these individuals were identified during scoping as having the potential to be disproportionately affected by changes in the way BLM manages sheep grazing in the DE-NCA. While foreign sheepherders may be a component of local livestock operations, it is unknown whether permittees operating on the D-E NCA depend on foreign workers. If herders operating in D-E NCA allotments slated for closure are predominantly foreign, then these action alternatives have the potential to disparately affect these minority populations.

# **Chapter 4. Environmental Consequences**

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## 4.1. Introduction

This chapter presents the direct, indirect, and cumulative impacts on the human and natural environment anticipated to occur from implementing the alternatives presented in Chapter 2, Alternatives, with impacts related to D-E NCA purposes presented first. The purpose of this chapter is to provide the decision-maker and the public with a description of how the environment is expected to be impacted if any of the alternatives in Chapter 2 were to be implemented, for the purpose of informing the decision on which land use plan to adopt. This chapter is organized by topic, similarly to Chapter 3, Affected Environment. Each topic area includes a section on methods of analysis that identifies indicators, assumptions, and types and nature of impacts on that resource from other resources/resource uses; an analysis of impacts for each of the five alternatives; a summary comparison of the alternatives; concluded with cumulative impacts. A separate section describing unavoidable adverse impacts, irretrievable or irreversible commitment of resources, and the relationship between local short-term uses and long-term productivity is at the end of the chapter.

Many management actions proposed in Chapter 2 are planning-level decisions and do not result in direct, on-the-ground impacts. However, by planning for uses on BLM-administered surface estate and Federal mineral estate during the 20-year planning horizon, the analysis focuses on impacts that could eventually result in on-the-ground impacts. Some BLM management actions may affect only certain resources and alternatives. This impact analysis identifies impacts that may enhance or improve a resource as a result of management actions, as well as those impacts that have the potential to impair a resource. If an activity or action is not addressed in a given section, no impacts are expected, or professional judgment indicates that the impact is expected to be negligible.

The BLM manages public lands for multiple uses in accordance with the Federal Land Policy and Management Act of 1976. In the D-E NCA, the BLM must manage with a focus on the purposes for which the D-E NCA was designated, as required by the Omnibus Public Land Management Act of 2009. In addition, proposed management for the Dominguez Canyon Wilderness (the Wilderness) is subject to the requirements of the Wilderness Act of 1964. Land use decisions are made to protect the resources while allowing for different uses of those resources, such as off-highway vehicle use, recreation, and livestock grazing. These decisions can result in trade-offs, which are disclosed in the analysis within this chapter. For example, when there are conflicts among resource uses or when a land use activity could result in unacceptable or irreversible impacts on the environment, the BLM may restrict or prohibit some land uses in specific areas. The projected impacts on land use activities and the associated environmental impacts of land uses are characterized and evaluated for each of the alternatives.

Impact analysis is a cause-and-effect process. The detailed impact analyses and conclusions are based on the BLM planning team's knowledge of resources and the project area; reviews of existing literature; and information provided by experts in the BLM, other agencies, interest groups, and concerned citizens. The baseline used for the impact analysis is the current condition or situation, as described in Chapter 3, Affected Environment. Impacts on resources and resource uses are analyzed and discussed in detail commensurate with resources issues and concerns identified throughout the process. At times, impacts are described using ranges of potential impacts or in qualitative terms.

### 4.1.1. Analytical Assumptions

Several assumptions were made to facilitate the analysis of the projected impacts. These assumptions set guidelines and provide reasonably foreseeable projected levels of development that would occur within the D-E NCA during the planning period. These assumptions should not be interpreted as constraining or redefining the management objectives and actions proposed for each alternative, as described in Chapter 2, Alternatives. The following general assumptions apply to all resource categories. Any specific resource assumptions are provided in the methods of analysis section for that resource.

- Sufficient funding and personnel would be available for implementing the final decision.
- Implementing actions from any of the RMP alternatives would be consistent with all valid existing rights, Federal regulations, bureau policies, and other requirements.
- Implementation-level actions necessary to execute the land use plan-level decisions in this RMP would be subject to further environmental review, including the National Environmental Policy Act of 1969 (NEPA), as appropriate. However, the RMP/EIS provides the necessary NEPA analysis for large-scale implementation decisions, including the implementation-level travel management decisions in the D-E NCA planning area.
- Direct and indirect impacts of implementing the RMP primarily occur on the public lands administered by the D-E NCA.
- Local climate patterns of historic record and related conditions for plant growth may change with warmer, drier conditions likely to occur over the life of this plan.
- In the future, as tools for predicting climate changes in a management area improve and changes in climate affect resources and necessitate changes in how resources are managed, the BLM may re-evaluate decisions made as part of this planning process and adjust management accordingly.
- Appropriate maintenance would be carried out to maintain the functional capability of all developments, including livestock water facilities, recreation developments such as toilets and trailheads.
- The discussion of impacts is based on the best available data. Knowledge of the planning area and professional judgment, based on observation and analysis of conditions and responses in similar areas, are used to infer environmental impacts where data are limited.
- Restrictions (such as siting, design, and mitigation measures) would apply, where appropriate, to surface-disturbing activities associated with land use authorizations and permits issued on BLM-administered lands. The BLM administers 210,012 surface acres within the decision area (note that this reported acreage number may vary up to 30 acres because of variability in the best available current survey information).
- Acreage figures and other numbers used in the analyses are approximate projections for comparison and analytic purposes only. Readers should not infer that they reflect exact measurements or precise calculations.



### 4.1.2. General Methodology for Analyzing Impacts

Potential impacts or effects are described in terms of type, context, duration, and intensity, which are generally defined as follows:

- *Type of Impact*— Impacts are described as beneficial or adverse within this chapter, except in sections that specifically describe why these terms are not used. The presentation of impacts for key planning issues is intended to provide the BLM decision maker and reader with an understanding of the multiple use trade-offs associated with each alternative.
- *Context*—Context describes the area or location (site-specific, local, planning area-wide, or regional) in which the impact would occur. Site-specific impacts would occur at the location of the action, local impacts would occur within the general vicinity of the action area, planning area-wide impacts would affect a greater portion of the D-E NCA, and regional impacts would extend beyond the planning area boundaries.
- *Duration*— Duration describes the length of time an effect would occur, either short term or long term. Unless otherwise noted, short term is defined as anticipated to begin and end within the first five years after the action is implemented. Long term is defined as lasting beyond five years to the end of or beyond the 20-year planning time frame addressed in the RMP.
- *Intensity*— Rather than categorize impacts by intensity (e.g., major, moderate, and minor) this analysis discusses impacts using quantitative data wherever possible.
- *Direct and Indirect Impacts*— Direct impacts are caused by an action or implementation of an alternative and occur at the same time and place. Indirect impacts result from implementing an action or alternative but usually occur later in time or are removed in distance and are reasonably certain to occur.
- *Cumulative Impacts*— Cumulative impacts are described in the Cumulative Impacts section of this chapter. Cumulative impacts are the direct and indirect effects of a proposed project alternative's incremental impacts when they are added to other past, present, and reasonably foreseeable actions, regardless of who carries out the action (40 CFR 1508.7). The list of actions used for the cumulative impact analysis is provided in section 4.2.2, Past, Present, and Reasonably Foreseeable Future Actions.

For ease of reading, impacts presented are direct, long term, and occur within the larger planning area unless they are noted as indirect, short-term/temporary, or localized. The analysis shown under Alternative A may be referred to in the other alternatives with such statements as “impacts would be the same as, or similar to, those under Alternative A” or “impacts would be the same as under Alternative A, except for . . .” as applicable.

Irreversible and irretrievable commitment of resources is discussed in section 4.8, Irreversible and Irretrievable Commitment of Resources. Irreversible commitments of resources result from actions in which resources are considered permanently changed. Irretrievable commitments of resources result from actions in which resources are considered permanently lost.

### 4.1.3. Incomplete or Unavailable Information

The Council on Environmental Quality (CEQ) established implementing regulations for NEPA, requiring that a Federal agency identify relevant information that may be incomplete or

unavailable for an evaluation of reasonably foreseeable significant adverse effects in an EIS (40 CFR 1502.22). If the information is essential to a reasoned choice among alternatives, it must be included or addressed in an EIS. Knowledge and information is, and would always be, incomplete, particularly with infinitely complex ecosystems considered at various scales.

The best available information pertinent to the decisions to be made was used in developing the RMP. Considerable effort has been taken to acquire and convert resource data into digital format for use in the RMP, both from the BLM and outside sources.

Under the FLPMA, the inventory of public land resources is ongoing and updated on a continuous basis. However, certain information was unavailable for use in developing this RMP, because inventories have either not been conducted or are not complete. Some of the major types of data that are incomplete or unavailable include the following:

- Comprehensive inventory of wildlife and special status species occurrence and condition
- Visitor use information (number and type)
- Air emissions inventory
- Site-specific surveys of cultural and paleontological resources
- Field verification of fire regime condition class (FRCC)

For these resources, estimates were made concerning the number, type, and significance of these resources on the basis of previous surveys and existing knowledge. In addition, some impacts cannot be quantified given the proposed management actions. Where this gap occurs, impacts are projected in qualitative terms or, in some instances, are described as unknown. Subsequent project-level analysis would provide the opportunity to collect and examine site-specific inventory data required to determine appropriate application of RMP-level guidance. In addition, ongoing inventory efforts by the BLM and other agencies in the planning area continue to update and refine information used to implement this plan.

## 4.2. Cumulative Impacts

Cumulative impacts are effects on the environment that result from the impact of implementing any one of the RMP alternatives in combination with other actions outside the scope of this RMP, either within the planning area or adjacent to it. Cumulative impact analysis is required by CEQ regulations, because environmental conditions result from many different factors that act together. The total effect of any single action cannot be determined by considering it in isolation but must be determined by considering the likely result of that action in conjunction with many others. Evaluation of potential impacts considers incremental impacts that could occur from the proposed project, as well as impacts from past, present, and reasonably foreseeable future actions. Management actions could be influenced by activities and conditions on adjacent public and non-public lands beyond the planning area boundary; therefore, assessment data and information could span multiple scales, land ownerships, and jurisdictions.

### 4.2.1. Cumulative Analysis Methodology

The cumulative impacts discussion considers the alternatives in the context of the broader human environment-specifically, actions that occur outside the scope and geographic area covered by the RMP.

Because of the programmatic nature of an RMP and cumulative assessment, the analysis tends to be broad and generalized to address potential effects that could occur from a reasonably foreseeable management scenario combined with other reasonably foreseeable activities or projects. Consequently, this assessment is primarily qualitative for most resources because of lack of detailed information that would result from project-level decisions and other activities or projects. Quantitative information is used whenever available and as appropriate to portray the magnitude of an impact. The analysis assesses the magnitude of cumulative impacts by comparing the environment in its baseline condition with the expected impacts of the alternatives and other actions in the same geographic area. The magnitude of an impact is determined through a comparison of anticipated conditions against the naturally occurring baseline as depicted in the affected environment (see Chapter 3, Affected Environment) or the long-term sustainability of a resource or social system.

The following factors were considered in this cumulative impact assessment:

- Federal, non-Federal, and private actions
- Potential for additive, countervailing, and synergistic effects or interactions among or between effects
- Potential for effects on cross political and administrative boundaries
- Other spatial and temporal characteristics of each affected resource
- Comparative scale of cumulative impacts across alternatives

Temporal and spatial boundaries used in the cumulative analysis are developed on the basis of resources of concern and actions that might contribute to an impact. The baseline date for the cumulative impact analysis is 2012. The temporal scope of this analysis is the life of the RMP. Within the BLM, the life of an RMP often lasts 15–25 years before a new RMP is necessary to address new or evolving issues. An RMP revision may be necessary if:

- New planning issues emerge that were not anticipated at the time this RMP was written
- Major demographic changes in surrounding communities, or major environmental changes require new Land Use Plan-level guidance for the protection of the purposes of the D-E NCA, as established in the Omnibus Act

Unless otherwise noted, the cumulative impact analysis area (CIAA) is composed of the D-E NCA, Uncompahgre Field Office, Grand Junction Field Office; and the Grand Valley, Ouray, and Norwood Ranger Districts of the Grand Mesa, Uncompahgre, and Gunnison National Forests; as well as all private, State and county lands within those boundaries. However, spatial boundaries may be larger for resources that are mobile or that migrate (e.g., elk populations) than for stationary resources. Spatial boundaries were developed to facilitate the analysis and are included under the appropriate resource section heading.

### **4.2.2. Past, Present, and Reasonably Foreseeable Future Actions**

Past, present, and reasonably foreseeable future actions are considered in the analysis to identify whether and to what extent the environment has been degraded, maintained or enhanced, whether ongoing activities are causing impacts, and trends for activities in and impacts on the area. Projects and activities are evaluated on the basis of proximity, connection to the same environmental systems, potential for subsequent impacts or activity, similar impacts, the likelihood a project will occur, and whether the project is reasonably foreseeable.

Projects and activities considered in the cumulative analysis were identified through meetings held with cooperating agencies and BLM employees with local knowledge of the area. Each was asked to provide information on the most influential past, present, or reasonably foreseeable future actions. Additional information was obtained through discussions with agency officials and review of publicly available materials and websites.

Effects of past actions and activities are manifested in the current condition of the resources, as described in the affected environment (see Chapter 3, Affected Environment). Reasonably foreseeable future actions are actions that have been committed to or known proposals that could take place within the 20-year planning period.

Reasonably foreseeable future action scenarios are projections made to predict future impacts—they are not actual planning decisions or resource commitments. Projections, which have been developed for analytical purposes only, are based on current conditions and trends and represent a best professional estimate. Unforeseen changes in factors such as economics, demand, and Federal, State, and local laws and policies could result in different outcomes than those projected in this analysis.

Other potential future actions have been considered and eliminated from further analysis, because there is a small likelihood these actions would be pursued and implemented within the life of the RMP, or because so little is known about the potential action that formulating an analysis of impacts is premature. In addition, potential future actions protective of the environment (such as new potential threatened or endangered species listings or regulations related to fugitive dust emissions) have less likelihood of creating major environmental consequences alone, or in combination with this planning effort. Federal actions, such as species listing, would require the BLM to reconsider decisions created from this RMP, because the consultations and relative impacts might no longer be appropriate. These potential future actions may have greater capacity to affect resource uses within the planning area; however, until more information is developed, no reasonable estimation of impacts could be developed.

Data on the precise locations and overall extent of resources within the planning area are considerable, although the information varies according to resource type and locale. Furthermore, understanding of the impacts on and the interplay among these resources is evolving. As knowledge improves, management measures (adaptive or otherwise) would be considered to reduce potential cumulative impacts in accordance with law, regulations, and the approved RMP.

Projects and activities identified as having the greatest likelihood to generate potential cumulative impacts, when added to the RMP alternatives, are shown in Table 4.1, Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Make up the Cumulative Impact Scenario.

**Table 4.1. Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Make up the Cumulative Impact Scenario**

<b>Other Land Use Plans</b>	<i>Interim Management Policy, Dominguez-Escalante National Conservation Area and Dominguez Canyon Wilderness</i> (BLM 2010a). This plan sets management, protection, and use goals and guidelines for the D-E NCA.
	Grand Junction Field Office RMP (BLM 1987). This plan sets management, protection, and use goals and guidelines for the BLM Grand Junction Field Office. This plan is being revised in a new RMP planning effort. Decision expected 2014. The RMP revision will set the goals, objectives, and actions for managing recreation on nearby BLM-administered land, which may cause a shift in use and travel patterns in the D-E NCA.
	Uncompahgre Basin (BLM 1989a) and San Juan/San Miguel (BLM 1985a) RMPs. These plans set management, protection, and use goals and guidelines for the BLM Uncompahgre Field Office. These plans are being revised in a new RMP planning effort. Decision expected 2014. The RMP revision will set the goals, objectives, and actions for managing recreation on nearby BLM-administered land, which may cause a shift in use and travel patterns in the D-E NCA.
	Colorado National Monument general management plan final EIS (National Park Service 2005). This plan sets management, protection, and use goals and guidelines for the Colorado National Monument.
	Colorado Canyons National Conservation Area and Black Ridge Canyons Wilderness RMP (BLM 2004i). This plan sets management, protection, and use goals and guidelines for the McInnis Canyons National Conservation Area.
	Gunnison Gorge National Conservation Area RMP (BLM 2004j).
	<i>Grand Mesa, Uncompahgre, and Gunnison National Forests Land and Resource Management Plan</i> (USFS 1983), as amended. This plan sets management, protection, and use goals and guidelines for the Grand Mesa, Uncompahgre, and Gunnison National Forests, Colorado. A Proposed Land Management Plan was completed in July 2006, but to date, the plan has not been approved.
	1996 Delta County master plan ( <a href="http://www.deltacounty.com/">http://www.deltacounty.com/</a> ). Countywide land use and growth plan for Delta County.
	Mesa County master plan (Mesa County 2000). Countywide land use and growth plan for Mesa County. Most recently amended in 2012.
	Montrose County master plan (Montrose County 2010). Countywide land use and growth plan for Montrose County edited several times, including in 2006 and 2010.
	Programmatic EIS (PEIS) for the U.S. Department of Energy's Uranium Leasing Program. When complete, this PEIS will cover 31 tracts of land covering an aggregate of approximately 25,000 acres in Mesa, Montrose, and San Miguel Counties in western Colorado for exploration, mine development and operations, and reclamation of uranium mines.
<b>Vegetation and Habitat Management</b>	Forestry. Past, current, and foreseeable forestry uses near the project area (particularly on nearby National Forest System lands) include personal and commercial timber harvests, poles and posts for fence building, wildings (live trees), Christmas trees, and commercial timber harvests. Harvests within the planning area are unlikely, as much of the D-E NCA has low firewood densities and is difficult to harvest.
	Vegetation treatments. Mechanical treatments of vegetation (e.g., chaining, rollerchops, Dixie-harrow, drill seeding, hydro-axing, brush mowing) were very common in the past on public and private rangelands in the CIAA. These treatments and maintenance of these vegetation treatments are still fairly common and will likely continue. The U.S. Forest Service recently approved a project to treat up to 1,000 acres of pinyon-juniper habitat on lands adjacent to the D-E NCA. These projects are being done to restore sagebrush habitats that have been invaded by pinyon-juniper, thought to be due to fire suppression. In addition, manual, biological, and mechanical treatments of large woody invasive species such as tamarisk and Russian-Olive have occurred in the riparian areas of rivers and streams and this type of restoration work is likely to continue in the foreseeable future.
	Earlier treatments from the 1960s and 1970s were done largely to increase forage for livestock and continue to have an impact on native plants and fauna throughout the CIAA. More recent

	treatments (including as recently as 2011) have a wider range of objectives that include wildlife and fuel reduction. This type of treatment is likely to continue in the foreseeable future.
<b>Fish and Wildlife Population Management</b>	Gunnison sage-grouse habitat. On July 18, 2014, the BLM issued a notice in the <i>Federal Register</i> announcing the agency's intention to incorporate clear and consistent conservation measures into BLM land use plans and prepare an associated EIS in order to protect Gunnison sage-grouse habitat across the range of the species. This amendment will affect the D-E NCA where Gunnison sage-grouse habitat occurs.
	Implementation of conservation plans for Gunnison sage-grouse within the planning area includes active management techniques to improve habitat quality for Gunnison sage-grouse, maintain or increase management unit populations, and maintain or increase Gunnison sage-grouse numbers. Many fuel treatments have co-benefits for Gunnison sage-grouse. Plans include the <i>San Miguel Basin Gunnison Sage-grouse Conservation Plan</i> (San Miguel Basin Gunnison Sage-grouse Working Group 2009), <i>Gunnison Sage-grouse Rangewide Conservation Plan</i> (Gunnison Sage-grouse Rangewide Steering Committee 2005), <i>Crawford Area Gunnison Sage-grouse Conservation Plan</i> (Crawford Area Gunnison Sage-grouse Working Group 2011), <i>Gunnison Sage-Grouse Conservation Plan Pinyon Mesa, Colorado</i> (Pinyon Mesa Gunnison Sage-Grouse Partnership 2000), <i>Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats</i> (Connelly, Knick, Schroeder, and Stiver 2004), <i>Colorado Sagebrush: A Conservation Assessment and Strategy</i> (Boyle and Reeder 2005); and Gunnison sage-grouse listing, critical habitat designation, and anticipated recovery plan.
	Fish management. CPW, USFS, and the BLM are contemplating a fish management project for Big Dominguez Creek that would replace non-native rainbow trout with regionally native cutthroat trout. This would change the fish composition of Big Dominguez Creek both in the D-E NCA and on National Forest System lands. It is likely that similar projects will be proposed in the future on Escalante Creek and Little Dominguez Creek.
	The Upper Colorado River Endangered Fish Recovery Program, which has conducted fish surveys and non-native fish removal in the Colorado River and lower Gunnison River will likely continue into the future.
	CPW is responsible for managing fish and wildlife populations in the State of Colorado. CPW manages these populations to meet population management objectives, which are often set for specific data analysis units (DAUs) across the State. For the D-E NCA, notable DAU population objectives have been set for mule deer D-19, elk E-20, bear B-5, mountain lion L-22. Regarding bighorn sheep within the D-E NCA, CPW manages according to the Colorado bighorn sheep management plan 2009–2019 (George, Kahn, Miller, and Watkins 2009). A new herd management plan specific to desert bighorn sheep is currently in development.
<b>Fire and Fuel Management</b>	Hazardous fuel reduction. Fuel treatments, including prescribed fires, chemical, biological, and mechanical treatment, and seeding, would likely continue and potentially increase in the future.
	Fires within the planning area are both naturally occurring and used as a management tool. Naturally occurring fires have been widely distributed in terms of frequency and severity. Increasing recurrence and severity of drought conditions have been predicted for this area as a result of climate change. This could, in turn, increase the occurrence and severity of wildfires on BLM-administered land. In many areas, fire suppression has resulted in older age classes of vegetation across the landscape over time, particularly in fire-adapted plant communities.
<b>Livestock Grazing</b>	Livestock grazing has a long history in the region. Generally, livestock use has decreased over the past 100 years. Grazing in portions of the CIAA has either remained stable or declined in the recent past, and demand on BLM-administered lands has remained stable in the last 10 years. Grazing use on adjacent National Forest System lands is often highly coordinated with the BLM (e.g., permittees often have permits on both BLM and adjacent National Forest System lands). Also, grazing use on National Forest System lands can impact wildlife that use both the D-E NCA and National Forest System lands. Grazing on private lands within the CIAA is expected to remain stable or slightly decrease as residential development increases.

<b>Recreation and Visitor Use</b>	Colorado's population has grown significantly in the past 10 years, and an increasing number of people are living near or seeking local public lands for a diversity of recreational opportunities characterized by the "mountain resort or outdoor lifestyle." The primary recreational activities in the D-E NCA are hiking, horseback riding, mountain biking, motorcycle and off-highway vehicle riding, recreational prospecting, rafting, kayaking, camping, hunting, wildlife watching and heritage tourism. Recreation-based visitor use in the region has increased in most areas in recent years and is expected to continue to increase on BLM lands and non-BLM lands. As recreation continues to increase in western Colorado, some recreationists will likely seek out less "crowded" areas.
<b>Lands and Realty</b>	<p>The BLM is moving toward the consolidation of BLM-administered lands to benefit the public. To achieve this goal within the D-E NCA, non-Federal parcels could be acquired or land exchanges could be made with willing sellers when doing so would increase conservation of natural resources, and increase access and use of BLM-administered lands.</p> <p>Existing and valid rights. Most large rights-of-way are located outside of the D-E NCA. Future development is expected to focus on the West-wide Energy Corridor, predominantly located across Highway 50 to the northeast of the D-E NCA.</p> <p>Colorado Mesa University Recreation and Public Purposes Act land sale. In January 2012, the BLM approved an application from Colorado Mesa University to acquire approximately 80 acres of public land in the Whitewater area for a regional public safety training facility.</p> <p>Mountain Island land exchange. The proposed exchange is located in the Glade Park/Pinyon Mesa area and consists of 788 acres (10 parcels) of BLM-managed land in exchange for 467 acres (2 parcels) of Mountain Island Ranch land. This project also includes a BLM purchase, through the Land and Water Conservation Fund, of a 29-acre private inholding within the McInnis Canyons National Conservation Area. Decision expected 2012.</p> <p>D-E NCA land acquisitions. Decisions expected in 2013 and 2014.</p> <p>Energy Gateway South 500 kV interstate transmission project with one alternative in northwest corner of Mesa County. Decision expected 2014.</p> <p>TransWest Express 600 kV interstate transmission project with one alternative in northwest corner of Mesa County. Decision expected 2014.</p> <p>Zephyr 500 kV interstate transmission project with multiple alternatives through the Grand Junction FO. Decision time frame unknown.</p> <p>Designation of energy corridors on Federal lands in the 11 western states programmatic EIS (see U.S. Department of Energy and BLM 2009). This multi-Federal agency programmatic EIS analyzes the environmental impacts of designating Federal energy corridors on Federal lands in 11 western states and incorporating those designations into relevant land use and RMPs.</p>
<b>Roadway Development</b>	Road construction has occurred in association with timber harvesting, historic vegetation treatments, energy development, and mining on BLM-administered lands, private lands, State of Colorado lands, and U.S. Forest Service lands. The bulk of new road building is occurring for community expansion and energy development. Road construction is expected to continue at the current rate on BLM and National Forest System lands; the future rate is unknown on private and State of Colorado lands.
<b>Water Diversions</b>	<p>The D-E NCA has been and will continue to be affected by irrigation and drinking water diversions. Reservoir operations have affected water supply, aquatic conditions, and timing. Irrigation rights are expected to continue being bought and sold in the future, with some new property owners informally changing how the right was historically used. Due to population growth and land sales, more agricultural water rights may be converted to municipal and industrial uses. Future oil shale development could also result in water diversions.</p> <p>The recent appropriation of water rights on the Big and Little Dominguez Creek watersheds will likely reduce the likelihood of significant impacts on the natural values of those creeks from upstream development. This is not the case with Escalante Creek and Cottonwood Creek, whose flows are highly dependent on upstream (and downstream) private water users.</p>
<b>Water</b>	The BOR released in May 2012 its Aspinall Unit operations plan, which will provide higher spring flows and protect the base flows in the Gunnison River. The goal of the operational modifications, developed in conjunction with cooperating agencies, is to assist in the recovery of the endangered fish species, while continuing to meet the needs of agriculture, recreation, and sport fisheries (Bureau of Reclamation 2012).

<b>Spread of Noxious/Invasive Weeds</b>	Noxious and invasive weeds, including tamarisk, have invaded and will continue to invade many locations in the planning area. Noxious weeds are carried by wind, humans, water, machinery, and animals. The D-E NCA currently manages weed infestations through integrated pest management, including biological, chemical, mechanical, manual, and educational methods. In particular, there are ongoing efforts with tamarisk beetle control and a biological control for Russian knapweed. The 1991 and 2007 records of decision for vegetation treatments on BLM lands and the 2007 programmatic environmental report guide for the management of vegetation—including noxious/and or invasive weeds—in western states (BLM 2007b). The BLM Uncompahgre Field Office finalized a noxious and invasive weed management strategy in 2010 (see BLM 2010b); a final EA and decision record were completed in 2013 that updated the field office integrated pest management plan (BLM 2013a, 2013b). The BLM Grand Junction Field Office finalized a noxious and invasive weed management EA in December 2010 (BLM 2010e). Noxious and invasive weeds are expected to continue to spread on all lands. Due to their ability to tolerate certain conditions, some species are expected to remain a serious long-term challenge in the planning area.
<b>Spread of Forest Insects and Diseases</b>	Several years of drought in western states have resulted in severe stress on pine trees. This stress has made the trees less able to fend off attacks by insects such as mountain pine beetles. Given the lack of lodgepole pine, mountain pine beetle is not present in the D-E NCA, but ips beetle is. Fire suppression and climate change have also played a role in insect infestations (including ips beetle). Most ips beetle kill areas have recovered and pinyon pine regeneration is occurring. It is a natural process. Sudden aspen death and spruce budworm are additional prevalent regional insect infestations.
<b>Drought</b>	For much of the last decade, most of the western United States has experienced drought. Inflows to Lake Powell (indicative of the Upper Colorado Basin) have been below average since 2000, and Colorado regularly goes through periods of drought that may be statewide, region-wide, or within a more localized area. Climate change may also be driving more frequent and extreme droughts in the region. Lower flows can impact riparian vegetation, aquatic systems (including fish), and wildlife. Particularly, lower spring peak flows would have an impact on the endangered fish in the Gunnison River.
<b>Climate Change</b>	<p>In 2001, the Intergovernmental Panel on Climate Change (IPCC) indicated that by the year 2100, global average surface temperatures would increase between 2.5 °F and 10.4 °F above 1990 levels, depending on the assumptions made in the predictive model (IPCC 2001). The IPCC has concluded that these changes in atmospheric composition are almost entirely the result of human activity, not the result of changes in natural processes that produce or remove these gases (IPCC 2007).</p> <p>According to a report completed for the CWCB (Ray et al. 2008), temperatures in Colorado increased by approximately 2 °F between 1977 and 2006. As reported in the 2007 Colorado Climate Action Plan developed by the State of Colorado (Ritter 2007), climate change effects within Colorado have included</p> <ul style="list-style-type: none"> <li>• Shorter and warmer winters with a thinner snow pack and earlier spring runoff</li> <li>• Less precipitation overall with more falling as rain</li> <li>• Longer periods of drought</li> <li>• More and larger wildfires</li> <li>• Widespread beetle infestations</li> <li>• Rapid spread of West Nile virus due to higher summer temperatures</li> </ul>

### 4.3. Resources

This section contains a description of the impacts to the biological and physical resources of the D-E NCA and follows the order of topics addressed in Chapter 3, Affected Environment. The



purposes for which the D-E NCA was designated are discussed first, followed by other resources, as follows:

- Geological and paleontological resources (D-E NCA purpose)
- Biological systems, including priority species and vegetation (D-E NCA purpose), special status species, fish and wildlife (D-E NCA purpose), noxious and/or invasive weeds, fire and fuels, soils, and water quality
- Cultural resources (D-E NCA purpose)
- Wilderness (D-E NCA purpose).
- Lands with wilderness characteristics outside Dominguez Canyon Wilderness and remaining wilderness study areas
- Scenic resources (D-E NCA purpose)
- Air resources

### 4.3.1. Geological and Paleontological Resources

This section discusses impacts on paleontological resources and outstanding geologic features from proposed management actions of other resources and resource uses. The unique and important geological and paleontological resources of the planning area were identified as a purpose of the designation of the D-E NCA in the Omnibus Act. Existing conditions concerning paleontological resources and outstanding geologic features are described in section 3.2.1, Geological and Paleontological Resources.

Paleontological resources include any fossilized remains, traces, or imprints of organisms preserved in or on the earth's crust that are of scientific interest and that provide information about the history of life on earth. BLM policy is to manage paleontological resources for scientific, educational, and recreational values and to protect or mitigate these resources from adverse impacts. To accomplish this goal, paleontological resources must be professionally identified and evaluated, and paleontological data should be considered as early as possible in the decision-making process. Requirements under all alternatives to identify paleontological resources in areas of high potential prior to ground disturbance would allow evaluation, avoidance, recovery, or other mitigation to preserve the scientific, educational, and interpretive resource uses.

Outstanding geologic features are natural rock structures such as monuments, arches, faults, and mud cracks having uncommon, rare, or exceptional aesthetic, educational, or scientific value, or well-known markers for historic events or sensitive cultural areas. These features are currently not surveyed or inventoried. All alternatives except Alternative A would require these resources to be identified and inventoried as they are found.

### Methods of Analysis

Potential impacts on paleontological resources were evaluated using the recently revised Potential Fossil Yield Classification (PFYC) system: I 2008-009, Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands. For the purpose of assessing impacts, only those objectives and actions potentially affecting scientifically significant fossils

were considered, as well as those objectives and actions potentially affecting outstanding geologic features.

Based upon a reasonable prediction of possible future types (but not timing or location) of development, the following impact analysis provides a general description of common impacts on geological and paleontological resources from planning actions.

### ***Indicators***

Paleontological resource adverse impacts primarily concern the potential destruction of nonrenewable fossil resources and the loss of information associated with these resources, and includes destruction as the result of surface disturbance and the unlawful or unauthorized collection of fossil remains. Indicators of significant adverse impacts on paleontological resources include the loss of any fossil that could yield information important to prehistory or that embodies the distinctive characteristics of a type of organism, environment, period of time, or geographic region.

Outstanding geologic resource impacts would be a management concern if they resulted in the destruction, severe damage, or alteration of the geologic feature to the point of non-recognition or loss of associated educational or scientific information. For this analysis, adverse impacts on paleontological resources would be significant if there were substantial direct or indirect damage or destruction to or loss of fossil resources.

More generally, adverse impacts on paleontological resources and outstanding geologic features could occur if reasonably foreseeable future actions were to do the following:

- Conflict with paleontological resource management objectives and guidelines established by the BLM
- Disturb paleontologically sensitive geologic formations (PFYC Classes 3 through 5)
- Destroy or substantially damage or alter an outstanding geologic formation

### ***Assumptions***

This analysis includes the following assumptions:

- Occurrences of paleontological resources are closely tied to the geologic units (e.g., formations, members, or beds) that contain them. The probability for finding paleontological resources can be broadly predicted from the geologic units present at or near the surface.
- Geologic mapping can be used for assessing the potential for the occurrence of paleontological resources using the BLM's PFYC system.
- Scientifically important fossils would continue to be discovered throughout the planning area. Discoveries are most likely to occur in geologic units classified as high potential PFYC Class 4 or 5, but known rich localities have also been found in the planning area in PFYC Class 3 units.
- Inventories conducted before surface disturbance or construction monitoring in high-probability areas may result in the identification and evaluation of previously undiscovered resources, which the BLM would manage accordingly.

- Potential for impacts on both surface and subsurface paleontological and outstanding geological resources is directly proportional to the amount of surface disturbance associated with a proposed action;
- At the programmatic level of analysis, it is not possible to identify and evaluate areas of higher paleontological sensitivity or outstanding geological resources with respect to locations of proposed surface disturbance. Therefore, potential impacts on paleontological and outstanding geological resources under each alternative can only be generally estimated, and they correlate directly to the amount of anticipated surface disturbance proposed under each alternative.
- Increased knowledge of paleontological resources and outstanding geologic features in the planning area could lead to improved management that has a beneficial impact on the resource and results in an increased public stewardship ethic.
- Increased access to, or activity, areas where resources are present or anticipated can increase the risk of vandalism or unauthorized collecting, which can destroy outstanding geologic features or paleontological resources.

Implementing management actions for the following resources would have negligible or no impact on Geological and Paleontological Resources and are therefore not discussed in detail: priority species and vegetation, noxious and/or invasive weeds, air resources, livestock grazing, and watchable wildlife areas.

## Direct and Indirect Impacts

Shallowly buried paleontological resources can be exposed by natural erosion, which can be exacerbated by surface-disturbing activities. Surface exposure can lead to discovery of paleontological resources, but fossils can be damaged or lost by the direct action of ground disturbance, subsequent erosion, and unauthorized collection. Measures to control erosion and loss of ground cover, such as reducing soil disturbance from construction, grazing, or forestry, applying restrictions on steep slopes, implementing storm water protection stipulations, managing vegetation, and post-burn fire rehabilitation, have the potential for reducing damage or destruction of outstanding geologic features or shallowly buried paleontological resources.

Excavations, whether for paleontological resources or archaeological sites, have direct, destructive impacts on paleontological resources and outstanding geologic features; the very nature of excavation is to remove *in situ* resources, resulting in destruction of the locality or outstanding geologic features. These effects are mitigated by data collected during excavation, which would be recorded in detail for future researchers to see, interpret, and further understand. Additionally, cooperation between the BLM and research or educational institutions during excavation and treatment planning would mitigate the excavation impacts. In some cases, paleontological resources and outstanding geologic features are actually saved from destruction by collection.

Impacts can typically be minimized by implementing mitigation measures, such as monitoring during construction activities, excavation of materials, or avoidance of surface exposures. If data recovery is the prescribed mitigation, this can also result in fossils being salvaged that may never have been unearthed as the result of natural processes; these newly exposed fossils would become available for scientific research, education, display, and preservation into perpetuity at a public museum. Unmitigated surface-disturbing activities could dislodge or damage paleontological resources and features that were not visible before surface disturbance.

Restrictions on surface-disturbing activities would be implemented in order to protect special status species and their habitat, fish and wildlife and their habitat, soils and water quality, and cultural resources. Where surface-disturbance is prohibited, outstanding geological features and paleontological resources would be protected from damage. On the other hand, excavations in these areas would also be prohibited unless it was determined that the excavation would not impact the value for which the restriction was designed to protect. This could limit opportunities to gain scientific information and, subsequently, opportunities for education within the scientific community. Discovery of new resources would also be reduced.

As shown in Table 2.1, Summary Comparison of Alternatives, in section 2.5 of this Proposed RMP, surface-disturbing activities would not be expressly prohibited under Alternative A, although the non-impairment criteria in the WSA would restrict surface-disturbing activities (see Impacts from Management of Wilderness and Wilderness Study Areas). Alternative B would have the most restrictions on surface-disturbing activities, resulting in the greatest protections as described above. The nature and type of impact would be the same under Alternatives C, D, and the Proposed Plan Alternative but would occur over fewer acres, because there would be fewer prohibitions on surface-disturbing activities.

### ***Impacts from Management of Geological and Paleontological Resources***

Paleontological resources and many outstanding geologic features would continue to have protection through required surveys prior to surface-disturbing activities in PFYC Classes 4 and 5 (which account for 37.4 percent of the D-E NCA) and sometimes Class 3 paleontological areas (which account for 56.1 percent of the D-E NCA) per current BLM policy. Proposed surface-disturbing actions in other areas would continue to be reviewed and inventories would be considered on a case-by case basis depending on knowledge of the proposed project area, the potential for paleontological resources to be present, the depth and extent of ground disturbance, and the presence of the known localities in the vicinity. Monitoring of construction and stipulations to stop work if resources are discovered would continue to be implemented in high potential areas. Paleontological resources are sometimes discovered through substantial excavations, such as construction operations. These measures would help ensure the protection of paleontological resources from impacts due to authorized surface-disturbing activities and help preserve opportunities for scientific, educational, and recreational uses of these resources.

Alternative A would reduce impacts on unique geological features on a case-by-case basis by developing mitigation measures during site-specific project analysis. Alternative A would also continue existing restrictions for the Gunnison Gravels area, including no surface occupancy (NSO) stipulations, closing the area to mineral materials sales or free use permits, and use of fencing. Alternative A management would protect and reduce impacts on unique geologic features on a case-by-case basis and would curtail potential disturbances within the Gunnison Gravels area through use restrictions. Alternative B would manage identified areas with outstanding geologic features, including faults, ripple marks, cross-bedding, lithified mud cracks and angular unconformities or geomorphologic features that could be damaged, and by applying site-specific disturbance relocation requirements. This alternative would also prohibit collecting rocks or other mineral materials in the D-E NCA, except for legitimate scientific uses or Native American spiritual or traditional uses. Unique geologic resources would be protected, because surface disturbance would be relocated to protect values. Other geologic resources would be protected due to the restrictions on rock collecting. The Gunnison Gravels area would be managed to continue existing fencing. The area would also be undesignated as an ACEC, which would increase the potential for disturbance from uses with recognized valid existing rights in the area.

Withdrawals would protect the area, because no new mineral entry or associated disturbance would be allowed. The withdrawals would be based on location, entry, and patent under the mining laws. They also would be based on the mineral leasing, mineral materials, and geothermal leasing laws, as provided by the Omnibus Act. The Gunnison Gravels fence would remain, providing limited protection of resources from motorized travel disturbance.

Management of paleontological resources under Alternatives A and B would require surveys and development of mitigation measures prior to surface disturbance in PFYC Class 4 and 5 areas. This would help protect the resources as described above (37.4 percent of the D-E NCA). However, surveys and mitigation would not be required in PFYC Class 3 areas, so damage could be incurred during surface-disturbing activities. However, if resources are found during surface-disturbing activities, the activity must cease until the BLM can evaluate the discovery and give approval for work to resume. The risk of unintended collection of scientifically important fossil specimens, exceedance of collecting limits, and damage to outstanding geologic features would be mitigated. Mitigations would be prohibiting recreational collection of invertebrate and plant fossils, rocks, and other mineral materials without a BLM-issued paleontological resources use permit. Alternative B would also not set any specific targets for long-term inventory of areas classified as PFYC classes 4 and 5. Inventories would be conducted on a case-by-case basis, and the probability for finding new discoveries would be the lowest of all the alternatives.

Under Alternative C, impacts on unique geologic resources and on the Gunnison Gravels area would be the same as under Alternative B. Management under Alternative C would require surveys and development of mitigation measures prior to surface-disturbance in PFYC Class 3, 4, and 5 areas, which cover most of the D-E NCA (93.5 percent of the D-E NCA). In addition to providing protection to the resources as described above, the surveys and inventories could result in the discovery of new paleontological localities, further advancing scientific knowledge for the region's history and educational opportunities and improving management that increases public stewardship ethic. Under Alternative C, 10 percent of PFYC Class 4 and 5 areas would be inventoried over the life of the plan, providing the most targeted inventory of any alternatives. Alternative C provides the highest potential for new discoveries in these areas.

Alternative D would manage identified areas with outstanding geologic features, such as faults, ripple marks, cross-bedding, lithified mud cracks, and angular unconformities. By applying site-specific disturbance relocation requirements, it also would manage geomorphological features that could be damaged. This alternative also would allow causal (non-commercial and non-permitted) collection of rocks and minerals in the D-E NCA. Impacts on unique geological resources would be similar to those under Alternative B. The Gunnison gravels area would be managed as a 15-acre ACEC, prohibiting all surface-disturbing activities. In addition, under this alternative, a fence would be constructed to exclude motorized travel, thereby reducing potential disturbance from motorized vehicles in the area. Alternative D would also prohibit the collection of rocks and minerals within the Gunnison Gravels area. These management actions would limit disturbance, would protect outstanding geologic features, and would afford the most protection of resources within the Gunnison Gravels area.

Management of paleontological resources under Alternative D would require surveys and mitigation measures prior to surface-disturbance in the same areas as Alternatives A and B; impacts would be the same. Alternative D would allow for recreational collection of invertebrate and plant fossils, rocks, and other mineral materials. This could lead to unintended collection of scientifically important fossil specimens, exceedance of collecting limits, or damage to outstanding geologic features. These types of impacts would also reduce opportunities for

scientific, educational, and recreational uses of these resources. Under Alternative D, 5 percent of PFYC Class 4 and 5 areas would be inventoried over the life of the plan, reducing the potential for new discoveries, compared to Alternative C.

The Proposed Plan Alternative would manage identified areas with outstanding geologic features, such as faults, ripple marks, cross-bedding, lithified mud cracks and angular unconformities. It also would manage geomorphological features that could be damaged by applying site-specific disturbance relocation requirements. Impacts would be similar to those described under Alternative B. The Proposed Plan Alternative would not allow permits to be issued for collecting rocks within the D-E NCA; the exception would be in cases where collection is intended for legitimate scientific uses or Native American spiritual or traditional uses. This would further protect outstanding geologic features and other geologic resources from potential damage or removal throughout the D-E NCA. Impacts from management of the Gunnison Gravels ACEC would be similar to those under Alternative D. The Proposed Plan Alternative allows for construction of fencing to exclude motorized travel. Impacts from fencing would be the same as those described under Alternative D.

Management of paleontological resources under the Proposed Plan Alternative would be similar to that under Alternative C except that surveys and mitigation measures would be required only in PFYC Class 3 areas with high potential for scientifically significant vertebrate paleontological sites, most often determined by the proximity of known (surveyed) vertebrate paleontological sites. While this would provide protection to the known resources as described above, it would limit opportunities for new discoveries, and would not contribute knowledge of paleontological resources and outstanding geologic features in the planning area. As under Alternatives A and B, the recreational collection of invertebrate and plant fossils, and rocks without a BLM-issued paleontological resources use permit would be prohibited; impacts would be the same as described under those alternatives. Like Alternative C, the Proposed Plan Alternative includes 10 percent of PFYC Class 4 and 5 areas, which would be inventoried over the life of the plan. Similarly to Alternative C, the Proposed Plan Alternative provides the highest potential for new discoveries in these areas.

Measures for interpretation, environmental education, use of paleontological resources or outstanding geologic features as interpretive sites may enhance appreciation and understanding of the fragile and finite nature of these resources; however, these uses can also lead to impacts resulting from access and use, such as exacerbated erosion from travel, vandalism, and unauthorized collection. These impacts could be experienced under Alternatives A, C, D, and the Proposed Plan Alternative, where the BLM would offer one or more sites for education and interpretation, although this impact could be more pronounced under Alternatives D and the Proposed Plan Alternative.

### ***Impacts from Management of Special Status Species and Natural Communities, Non-Special Status Fish and Wildlife, Soils and Water Quality, and Cultural Resources***

Management of special status species, fish and wildlife, soils and water quality, and cultural resources would restrict surface-disturbing activities to some degree; therefore, this could protect unique geologic and paleontological resources. The types of impacts are discussed above, under Direct and Indirect Impacts.

### ***Impacts from Management of Fire and Fuels***

Paleontological resources and outstanding geologic features exposed on the surface are usually found on steep slopes or rock formations that do not support significant amounts of vegetation. However, fire management activities related to unplanned ignitions can involve ground-disturbing activities at depths or in areas that can directly impact paleontological resources and outstanding geologic features, if present. These actions include constructing fire lines and using heavy equipment. High severity fire can also damage surface fossils, including cracking, spalling, and oxidizing. Fire can result in impacts through erosion and the increased visibility of paleontological resources. Fire can also remove vegetation and expose previously undiscovered resources, allowing for their study and protection; however, locations exposed by fire can be susceptible to damage by subsequent erosion, vandalism, and unauthorized collecting.

Alternative B would not allow the use of vegetation treatments except to improve areas of significant deterioration, and would limit manipulation of fire and fuels to a minimal amount. These actions could limit the amount of heavy equipment used during fires, which could lessen the extent of damage to sensitive geologic areas and paleontological localities. However, Alternative B would result in the most acres where wildfire could be managed for multiple objectives (including resource benefit) would be allowed (208,568 acres). Alternatives C, D and the Proposed Plan Alternative would allow for more vegetation treatments, which could impact paleontological resources and outstanding geologic features as described above. The Proposed Plan Alternative would result in the second-most acres where wildfire could be managed for multiple objectives (including resource benefit) would be allowed (208,568 acres), followed by Alternative C (181,308 acres), Alternative A (167,772 acres) and Alternative D (166,557 acres).

### ***Impacts from Management of Wilderness and Wilderness Study Areas***

Under all alternatives the Dominguez Canyon Wilderness would continue to be managed to protect its wilderness character, allowing for minimal surface-disturbance on 66,280 acres within the D-E NCA. The types of impacts expected from surface disturbing activities are described under Direct and Indirect Impacts. In addition, Alternatives C, D, and the Proposed Plan Alternative would manage all or portions of the Wilderness specifically to protect and restore its supplemental values, which include paleontological resources, providing additional protection to the resources in the area.

Under all alternatives the Dominguez Canyon WSA would continue to be managed according to the nonimpairment standard described in BLM Manual 6330, which prohibits new surface-disturbances (the WSA constitutes 3,032 acres within the D-E NCA). This would protect paleontological resources and outstanding geologic features as described under Direct and Indirect Impacts.

### ***Impacts from Management of Lands with Wilderness Characteristics***

In order to maintain the wilderness characteristics of these areas, surface-disturbing activities would be prohibited in all four land units inventoried to contain wilderness characteristics (outside of the designated Wilderness and WSA) under Alternative B (accounting for 21,816 acres within the D-E NCA). This would result in the avoidance of impacts expected from surface disturbance as they are described under Direct and Indirect Impacts. In addition, travel would be limited to non-motorized, non-mechanized uses, which would reduce the risk of degradation of resources as described under Impacts from Management of Transportation and Travel.

Under the Proposed Plan Alternative, two of the four units inventoried to contain wilderness characteristics (outside of the designated Wilderness and WSA), accounting for 13,597, acres

would be subject to site-specific relocation restrictions. This would limit impacts on geological and paleontological resources, but impacts from surface-disturbing activities may still occur. Impacts from travel would be the same as Alternative B but over a smaller area. Under Alternatives A, C, and D, the BLM would not commit to preserving inventoried wilderness characteristics. Therefore, there would be no anticipated impacts from management of lands with wilderness characteristics on geological and paleontological resources under these three alternatives.

### ***Impacts from Management of Scenic Values***

Outstanding geologic features can contribute to the visual character and may be considered in determining visual resource management (VRM) classifications. VRM Class I and II objectives provide protection of paleontological resources and outstanding geologic features by requiring that landscape modifications meet high standards for mitigation, usually reducing the scale of development that can be permitted in the area. Effects would be directly and indirectly reduced where surface-disturbing activities are limited in the more sensitive VRM class areas. Use of the visual resource contrast rating system during project planning could reduce alterations to geologic features and visual intrusions on the surrounding landscape.

Under Alternative A, 104,871 acres would continue to be managed according to VRM Class III objectives, which allow for modifications to the landscape that are noticeable by the casual observer but do not dominate the view. These landscape modifications could result in surface-disturbing activities that damage significant paleontological resources or outstanding geologic features. However, requiring paleontological clearances and surveys and implementing site-specific mitigation measures to reduce impacts on unique geologic resources would reduce the potential for damage to paleontological resources or outstanding geologic features. Under Alternatives B, C, D, and the Proposed Plan Alternative, the entire D-E NCA would be managed as VRM Class I or II, reducing the potential for impacts. It could also limit the scale of excavations.

### ***Impacts from Management of Recreation***

Recreational activities can physically alter exposed or shallowly buried paleontological resources and outstanding geologic features, leading to damage from erosion, and facilitate unauthorized collection and vandalism. Areas managed as special recreation management areas (SRMAs) and extensive recreation management areas (ERMAs), particularly for trail-based recreation (as opposed to river-based recreation), concentrate recreation and increase the risk for direct, indirect, and inadvertent damage to paleontological resources and outstanding geologic features from camping, visitor use, recreation, vandalism, firewood gathering, and other activities. However, because these risks occur in a concentrated area, the BLM is better able to manage recreation to minimize the potential for damage. Areas not managed as RMAs are subject to less intensive, unstructured recreational management and impacts on paleontological and geological resources are more difficult to anticipate, monitor, and mitigate.

Under all action alternatives, climbing anchors would be prohibited where outstanding geologic features could be damaged, providing direct protection to the features. Outstanding geologic features would be at risk from this type of activity under Alternative A.

Continuation of recreation management under Alternative A would result in the greatest risk to resources. This is because recreation throughout the D-E NCA would remain without updated management to reduce conflicts between resources. This could result in loss or damage of paleontological resources by vandalism and unlawful collecting (poaching). This is evidenced



by damaged paleontological resources in the Cactus Park and Ninemile Hill areas. Geocaching activities would continue to be allowed, which would result in possible increases in damage to paleontological localities and outstanding geologic features. These impacts are difficult to mitigate to below the threshold of significance, but they can be greatly reduced by increasing public awareness about the scientific importance of paleontological and geological resources through education, community partnerships, and interpretive displays, and by informing the public about penalties for unlawful destruction or unlawful collection of these resources from public lands.

Under Alternative B, management of the Cactus Park ERMA (34,973 acres) would provide concentrated trail-based recreation in an area with a high density of known paleontological sites, which could result in damage to the resources as described above. A total of 69,479 acres of additional trail-based ERMA (Hunting Ground, Sawmill Mesa/Wagon Park, and Escalante Canyon) could result in impacts on paleontological resources or unique geologic features where they occur within the ERMA. Rock climbing in the East Creek ERMA could inadvertently damage outstanding geologic features; however, the impact could be reduced or eliminated with careful consideration for where climbing routes are designated and in anchor placement. Alternative B would also prohibit geocaching, resulting in elimination of the impacts from this activities.

While the targeted recreation activities associated with the Gunnison River SRMA (3,746 acres) and Cactus Park SRMA (34,973 acres) are not anticipated to impact paleontological or geological resources, managing only two RMAs under Alternative C would likely result in more dispersed, unstructured recreation in the D-E NCA, which would limit the ability of the BLM to monitor for and mitigate impacts on paleontological or geological resources from recreation. Geocaching activities would require BLM authorization prior to placement, which would allow the BLM to avoid damaging impacts on paleontological localities and outstanding geologic areas due to increased visitation or vandalism. Alternative C would also prohibit the use of permanent anchors on climbing areas, eliminating possible damage to outstanding geologic features.

Under Alternative D, the management of the Ninemile Hill SRMA (6,064 acres) and Cactus Park SRMA (26,873 acres) would provide concentrated trail-based recreation in an area with a high density of known paleontological sites. While the concentration of recreation in these areas and other trail-based SRMAs (Hunting Ground, and Lower Sawmill Mesa, accounting for 37,546 acres) and the Upper Sawmill Mesa ERMA (37,522 acres) under this alternative would increase the risk for impacts on paleontological and geologic resources, the BLM would be able to respond to these risks through monitoring and mitigation. Managing the East Creek SRMA (1,783 acres) for rock climbing would result in impacts similar to those described under Alternative B; however, climbing would not be limited to designated routes, which could increase the risks to outstanding geologic features and paleontological resources due to fewer controls on locations for climbing resulting in possible inadvertent damage to sensitive paleontological or geological resources. In this case, monitoring would be a method for responding to damage or tracking trends in use that could predict damage before it happened, and then mitigate impacts. Impacts from geocaching would be the same as Alternative A.

Under the Proposed Plan Alternative, the management of the Ninemile Hill ERMA (10,440 acres) and Cactus Park SRMA (27,406 acres) would provide concentrated trail-based recreation in an area with a high density of known paleontological sites. While the concentration of recreation in these areas and other trail-based ERMAs under this alternative (i.e., Hunting Ground and Sawmill Mesa/Wagon Park, which total 81,849 acres), the most of any alternative, would increase the potential for impacts paleontological and geologic resources, the BLM would be able to respond to these risks through monitoring and mitigation. Managing the East Creek ERMA

(1,783 acres) for rock climbing would result in the same impacts as described under Alternative D. Physical geocaches would only be allowed outside of the Wilderness and would require BLM authorization prior to placement; impacts would be the same as Alternative C in this area. Inside the Wilderness, navigational recreational activity (i.e., geocaching) would only be allowed in a virtual setting (i.e., earth caches), so there would be minimal potential for impacts on the resources in the wilderness area.

### ***Impacts from Management of Scientific Use and Educational Use***

Impacts from science and education as they relate to geology and paleontology are discussed above, under Impacts from Management of Geological and Paleontological Resources.

### ***Impacts from Management of Transportation and Travel***

Unmanaged motorized travel can result in serious impacts on paleontological resources and geologic features, such as degrading the integrity of resources or by exacerbating erosion. Routes also provide access to areas that could yield new paleontological or geological discoveries but can also lead to vandalism and unauthorized collection of fossils.

Restricting vehicle use to existing or designated routes reduces the risk of disturbing resources located off trails and helps protect the localities' integrity and setting. The closure of routes to multiple methods of travel provides the greatest protection, including reduced opportunities for vandalism and unauthorized collection of fossils. Direct effects would be identified through inventory, and adverse effects would be addressed through avoidance by redesign or mitigation of roads and trails. Ongoing indirect effects from use of designated routes are less likely to be detected or monitored and enforcing restrictions is difficult.

Under all action alternatives, motorized travel would be limited to designated routes. This would limit potential impacts from cross-country motorized travel to delineated roads and trails. Unique geologic and paleontological resources near existing routes would still be vulnerable to erosion and human-caused damage. Potential impacts from cross-country foot and horse travel would remain as described above.

Alternative A closes 69,263 acres to OHV use (see Glossary). Paleontological and unique geological resources would have a higher degree of protection within closed areas. Public travel would be allowed on 716 miles of routes, the most of any alternative, including 626 miles designated or available for different types of motorized and mechanized use and 90 miles designated for foot and horse travel. Alternative A designates 140,737 acres as open for cross-country mechanized travel, for example bicycles. Paleontological and unique geological resources would be more vulnerable to loss or damage within these open areas. This is because mechanized travel would increase the potential for soil erosion in areas.

Alternative B would close specific identified areas totaling 91,009 acres to OHV use. Paleontological and unique geological resources would have a higher degree of protection within closed areas and would provide more protection than Alternative A. Furthermore, 119,309 acres would be closed to cross-country mechanized travel, for example bicycles. Paleontological and unique geological resources would be further protected from mechanized travel impacts to a greater degree than Alternative A. Some form of public use would be allowed on 386 miles of routes, the second fewest of any of the alternatives, including 329 miles designated for different types of motorized vehicles, 339 miles where mechanized use would be allowed, and 47 miles designated solely for foot and horse travel.

Alternative C would close the most miles of routes, allowing public use on only 244 miles, which would result in the least potential for direct damage to resources from travel and opportunities for vandalism and unauthorized collection of fossils. However, because access would be so limited, it could also impact access to sites for scientific and educational use. Alternative C also would close 66,193 acres to motorized and mechanized travel within the Dominguez Canyon Wilderness. This would protect unique geological and paleontological resources in this area. However, because access would be so limited, it could also impact access to sites for scientific and educational use. Alternative C designates 144,126 acres as limited to motorized and mechanized travel. Impacts on important values, such as potential erosion and human-caused damage, would be higher near delineated roads and trails. Some form of public use would be allowed on 244 miles of routes, the fewest of any of the alternatives, including 186 miles designated for different types of motorized vehicles, 209 miles where mechanized use would be allowed, and 35 miles designated solely for foot and horse travel.

Both Alternative D and the Proposed Plan Alternative would close 66,193 acres to motorized and mechanized travel. Impacts would be the same as Alternative C. Designated closed and limited travel management areas would limit access throughout the D-E NCA. It would also reduce the potential for direct damage to resources from route-based travel, as well as reduce opportunities for vandalism and unauthorized collection of fossils.

Under Alternative D, some form of public use would be allowed on 463 miles of routes, including 329 miles designated for different types of motorized vehicles, 397 miles where mechanized use would be allowed, and 66 miles designated solely for foot and horse travel.

Under the Proposed Plan Alternative, some form of public use would be allowed on 551 miles of routes, including 407 miles designated for different types of motorized vehicles, 419 miles where mechanized use would be allowed (including all motorized routes), and 112 miles designated solely for foot and horse travel.

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

Under Alternative A, 91,327 acres would be unsuitable for public utilities, including the Gunnison River Corridor, Cactus Park, and Dominguez Canyon areas. Any geologic and paleontological resources in these areas would be protected from possible surface-disturbing activities resulting from land use authorizations. In the remaining area where ROWs and land use authorizations could be permitted, surveys would be required prior to surface-disturbing activities in PFYC Class 4 and 5 areas. Impacts are described under Impacts from Management of Geological and Paleontological Resources.

The BLM manages two public utility corridors under Alternative A. Paleontological and unique geologic resources in corridor boundaries would be subject to potential damage. This is because surface disturbance for utility projects would be concentrated in those boundaries. Development of site-specific mitigation measures would reduce the potential for adverse impacts.

Under Alternative B, the entire D-E NCA would be managed as a ROW exclusion area, with certain exceptions identified in Chapter 2, which would protect geologic and paleontological resources from surface-disturbing activities associated with land use authorization. Unlike the other action alternatives, exceptions would not be made for research and monitoring, which could limit the BLM's ability to adequately monitor impacts and adjust management to protect resources.

Impacts under Alternative C would be similar to those described for Alternative B except that exceptions to ROW exclusion management could be made for research and monitoring where it would further the understanding of and management for the purposes of the D-E NCA, which include paleontological and geological resources.

Alternative C would manage one utility corridor. Paleontological and unique geological resources in the corridor boundaries would be subject potential damage. This is because surface disturbance for utility projects would be concentrated. Development of site-specific mitigation measures would reduce the potential for adverse impacts, and potential impacts would be lower than under Alternative A.

Under Alternative D, 90,290 acres would be managed as ROW exclusion areas. Any geological and paleontological resources in these areas would be protected from possible surface-disturbing activities resulting from land use authorizations. The potential for surface-disturbing impacts on unique geological and paleontological resources would be higher than under Alternative C.

Alternative D would also manage 118,784 acres as ROW avoidance areas. Avoidance areas would provide limited protection for geological and paleontological resources. While proposed ROWs would be sited to avoid impacts to the extent possible, an authorization could be granted that would increase potential impacts on paleontological or geologic resources from surface disturbance. Impacts would vary based on the level of mitigation measures and avoidance area stipulations implemented. Impacts relating to utility corridor management would be the same as Alternative C, because only one corridor would be managed.

Impacts under the Proposed Plan Alternative would be similar to those under Alternative C with an additional exception to the ROW exclusion area for a 75-foot buffer along Highway 50, which would be managed as a ROW avoidance area. The area managed as a utility corridor along Highway 141 in Alternative C would be managed as a ROW avoidance area in the Proposed Plan. If utilities are placed within these ROW avoidance areas, it could damage outstanding geologic features or paleontological resources. About half of the area is PFYC Class 1 through 3 and would require surveys and mitigation for paleontological resources only if there is a high potential for scientifically significant fossils. The other half is PFYC 4 or 5 and would require surveys prior to bedrock disturbance. The Proposed Plan Alternative would not manage a utility corridor. Paleontological and unique geological resources would be subject to less potential damage than under alternatives A, C, and D, because surface disturbance for utility projects would be less likely.

### ***Impacts from Management of Areas of Critical Environmental Concern and Wild and Scenic Rivers***

Special designation areas, including ACECs and wild and scenic rivers (WSRs), are afforded special management measures designed to protect a variety of resource values, including paleontological and geologic values. Management measures vary but generally include surface use restrictions, ground disturbance restrictions, prohibitions on motorized travel, stringent VRM classifications, annual monitoring, and other restrictions on development and resource use. Paleontological resources and outstanding geologic features within these areas would be preserved *in situ*, or collected only through an approved scientific/educational permit. New discoveries from development and deep excavations would be less likely in these areas, but permits for scientific uses (collection, excavation, and curation) would be considered if compatible with the resource values that the designation is protecting.

Under Alternative A, the Gunnison Gravels area would continue to be designated as an ACEC (5 acres), and surface occupancy and utility ROWs would be prohibited, protecting what remains of the paleo-river gravel deposit within the ACEC. The management of the Escalante Canyon ACEC (1,895 acres) would also provide incidental protection to unique geologic features, including the Escalante potholes, through application of SSR restrictions (which would protect paleontological resources and outstanding geologic features) and providing outdoor education opportunities to educate the public on the unique resources found in the ACEC. Four WSR study segments, Big and Little Dominguez Creeks Segments 1 and 2, contain geologic outstandingly remarkable values (ORVs) and would continue to be managed as eligible for inclusion in the National Wild and Scenic Rivers System (NWSRS). Interim protective management for WSR study segments would directly protect outstanding geologic features in these areas. Paleontological and outstanding geologic features would receive incidental protection where they occur within the study corridor of other eligible segments, particularly the segments classified as wild or scenic, which restrict development in the study corridor.

No ACECs would be designated under Alternative B, so there would be no incidental protection from ACEC management. Portions of the Gunnison River and Cottonwood Creek would be determined suitable for inclusion in the NWSRS (totaling 9,027 acres), although neither have a geologic or paleontological ORV, so these values would not be directly protected, although they would receive incidental protection.

Alternative C would designate the second-most area as ACECs (12,823 acres). Under Alternative C, Escalante Canyon would be designated as an ACEC to protect unique and outstanding geological resources and the River Rims would be designated as an ACEC to protect unique and sensitive paleontological resources. The associated management actions would provide protection from surface-disturbing activities, including motorized vehicles impacts. Additionally, management of the Escalante Canyon and Big Dominguez Canyon ACECs would provide incidental protection from surface-disturbing activities to outstanding geologic formations, including the Escalante potholes, and paleontological resources if they were to be discovered in the area. All WSR study segments would be determined suitable for inclusion in the NWSRS (totaling 26,026 acres). Impacts would be the same as described for Alternative A.

Alternative D would designate the most ACECs of any alternative (29,663 acres), including Escalante Canyon, Gunnison Gravels, Gibbler Mountain, and Gunnison River ACECs to protect sensitive geological processes or paleontological resources; impacts would be the same as Alternative A but would occur over a larger area. The alternative would also provide protections to outstanding geologic resources in the Escalante Canyon area, which would eliminate impacts in that area. All WSR study segments would be determined not suitable and released from WSR interim protective management so there would be no incidental protection from WSR management.

The Proposed Plan Alternative would designate the third-most area as ACECs (9,011 acres). Under the Proposed Plan Alternative, Gunnison Gravels and Escalante Canyon would be designated as ACECs to protect unique and outstanding geological resources. The associated management actions would provide protection from surface-disturbing activities, including motorized vehicles impacts. The Gibbler Mountain and River Rims ACECs would also be designated to protect sensitive paleontological resources; impacts would be similar to those for the Gunnison Gravels and Escalante Canyon ACECs. Only Cottonwood Creek would be determined suitable for inclusion in the NWSRS and would not provide direct protection to geologic or paleontological resources (totaling 3,728 acres). However, because the segment

is classified as wild, development within the study corridor would be very limited, providing incidental protection to paleontological and outstanding geologic features in the study corridor.

## Summary of Impacts from Alternatives

Alternative A meets agency requirements for the protection of paleontological and outstanding geological resources. Outstanding geologic features have no specific management actions under Alternative A; therefore, their protection would result indirectly from application of protective stipulations in other resource programs. Because recreation under Alternative A would be dispersed throughout the D-E NCA, the risk for adverse impacts through unmitigated damage to resources is highest under this alternative.

Management direction under Alternative B has more protective actions than Alternative A, including specific direction to restrict or prohibit uses impacting outstanding geologic features, prohibition of uses in sensitive geologic areas, prohibition of permanent climbing anchors, and a prioritized monitoring program for surficial paleontological sites. Like Alternative A, all of these measures would avoid or reduce the adverse impacts described above, such as damage to scientifically valuable paleontological resources or outstanding geologic features, or the loss of paleontological resources by vandalism and unlawful collecting (poaching). On the other hand, with an emphasis on natural processes and less on active management, the BLM's ability to proactively protect resources could be limited.

Alternative C would have similar impacts as Alternative B but would emphasize active management of biological and cultural resources, which would provide more incidental protection to paleontological resources and outstanding geologic features through restrictions on surface-disturbing activities. Alternative C would also include more extensive paleontological pre-construction survey requirement to PFYC Class 3 areas in addition to PFYC Class 4 and 5 areas. This would result in approximately 204,300 acres that could be surveyed for resources (approximately 94 percent of the entire D-E NCA). In addition, 10 percent of PFYC Class 4 and 5 areas would be inventoried. These actions would likely lead to discovering many more localities than are currently known, further expanding the scientific record for the area and yielding beneficial impacts on the resource.

Alternative D would have the same types of impacts as described for Alternative B. However, management direction would allow recreational (non-permitted) collecting of common invertebrate and plant fossils, which would result in adverse impacts through an unknown amount of collection and possible loss of scientific data. Alternative D would only require that 5 percent of PFYC Class 4 and 5 areas be inventoried over the life of the plan, providing more monitoring than A and B but less than C. More areas would be managed as SRMAs or ERMAs under Alternative D than under Alternatives A, B, or C, concentrating recreation in these areas. Increased concentrations could lead to more surface-disturbance and risk of vandalism; however, because these risks occur in a concentrated area, the BLM is better able to manage recreation to minimize the potential for damage.

Management in the Proposed Plan Alternative would be similar to that under Alternative C, resulting in approximately 204,300 acres that could be surveyed prior to construction for resources (approximately 94 percent of the entire D-E NCA). In combination with the management action to inventory 10 percent of PFYC Class 4 and 5 areas, these actions would likely lead to discovering many more localities than are currently known, providing beneficial impacts by further expanding the scientific record for the area and yielding beneficial impacts on the resource. The Proposed

Plan Alternative would manage the most acres as ERMAs or SRMAs, resulting in similar impacts to Alternative D but over a greater area.

## **Cumulative Impacts**

Effects on paleontological resources and outstanding geologic features that have occurred in the past include destruction or damage of resources due to construction, recreation, theft, vandalism, and the effects of natural processes without the benefit of recovery, scientific study, or interpretation.

An increasing regional population and recreational demand could lead to greater damage to the resources through unauthorized removal, vandalism, incremental damage of surface resources, and subsequent erosion. This could result in the unmitigated loss of scientific information and could reduce the educational and interpretative potential of the resource. Adherence to appropriate pre-development, development, and post-development protective measures would reduce most impacts on an insignificant level. On the other hand, as a result of D-E NCA management and the fact that paleontological resources and outstanding geologic features are a purpose of the D-E NCA, the public could have an increased awareness of and appreciation for the resources. This could lead to a sense of stewardship and increased public knowledge on regional scales.

### **4.3.2. Biological Systems**

The Omnibus Act identified the D-E NCA's unique and important natural, wildlife, riparian and water resources as purposes the area's designation as a National Conservation Area. These resources are described below under the following headings, Priority Species and Vegetation, Special Status Species and Natural Communities, Non-Special Status Fish and Wildlife, Fire and Fuels, Noxious and Invasive Weeds and Soils and Water Quality.

#### **4.3.2.1. Priority Species and Vegetation**

This section discusses impacts on the eight priority vegetation communities identified in Chapter 2 from proposed management actions of other resources and resource uses. Existing conditions concerning vegetation, wildlife, and special status species are described in section 3.2.2.1, Priority Species and Vegetation; section 3.2.2.2, Special Status Species and Natural Communities; and section 3.2.2.3, Non-Special Status Fish and Wildlife. By managing for priority vegetation types, the BLM is able to streamline its management of biological resources, because the health of many species of fish and wildlife are tied, or "nested," to the management of these vegetation types. The list of priority vegetation communities is not comprehensive, but it is representative of the ecological systems within the planning area. As such, priority vegetation communities encompass all other wildlife and special status species that are described in further detail in sections 4.3.2.2, Special Status Species and Natural Communities and 4.3.2.3, Non-Special Status Fish and Wildlife.

## **Methods of Analysis**

The process described in Appendix A was used to identify vegetation types and species that would be priorities for management and would thus require special management consideration or attention (see Chapter 3 and Appendix A, Planning for Priority Species and Vegetation, for more details on the process). Through this process, the following vegetation communities

were identified as priorities for management within the decision area: desert shrub/saltbush, pinyon-juniper woodlands, sagebrush shrublands, ponderosa pine, mountain shrublands, riparian, seeps and springs, and hydrology and aquatic systems. All fish and wildlife species, including special status species, are largely addressed through management of priority vegetation types.

This analysis is organized by resources and resource uses that could potentially affect priority vegetation. Under each subheading, a general description of the nature and type of impacts on all vegetation under all alternatives is presented, with additional analysis for each priority vegetation community or habitat as appropriate and applicable. Impacts are analyzed using the indicators presented below; if no impact on an indicator is anticipated, the indicator is not mentioned in the analysis. An analysis of the impacts on priority vegetation for each alternative follows the nature and type of impacts discussion.

### **Indicators**

Indicators are used to identify the level or risk of impact caused by management actions on a given resource. The indicators for priority vegetation are presented in Table 4.2, Priority Vegetation Indicators, and are derived from the attributes listed in Appendix A. Desired trends for each indicator are presented in Appendix A. Some of the indicators may be more affected by BLM management actions than others.

**Table 4.2. Priority Vegetation Indicators**

<b>Indicator</b>	<b>Priority Vegetation</b>
Vegetation structural composition	Desert shrub/saltbush Pinyon-juniper woodlands Sagebrush shrublands Mountain shrublands
Understory invasive species	Desert shrub/saltbush Pinyon-juniper woodlands Sagebrush shrublands Mountain shrublands
Age class structure	Pinyon-juniper woodlands Sagebrush shrublands Mountain shrublands
Presence/dominance of crested wheatgrass	Pinyon-juniper woodlands Sagebrush shrublands
Plant species composition/dominance	Desert shrub/saltbush
Disturbance regime	Desert shrub/saltbush
Presence/abundance of BLM sensitive plant species	Pinyon-juniper woodlands
Gunnison sage-grouse winter habitat condition	Sagebrush shrublands
Sagebrush fragmentation and extent	Sagebrush shrublands
Fire regime condition class	Ponderosa pine
Understory species composition	Ponderosa pine
Number and size of stands	Ponderosa pine
Vigor	Mountain shrublands
Fire fuel load on Gunnison River	Riparian
Stream functionality	Riparian
Invasive species composition on Gunnison River	Riparian
Invasive species composition on tributary creeks	Riparian
Presence of saline grasslands	Riparian
Presence of wetland obligate plant species	Riparian Seeps and springs
Vegetation structural diversity	Riparian



Indicator	Priority Vegetation
Groundwater hydrology	Seeps and springs
Invasive species composition/dominance	Seeps and springs
Presence of wetland obligate plant species	Seeps and springs
Rare plant presence	Seeps and springs
Surface water hydrology	Seeps and springs
Trampling and human disturbance	Seeps and springs
Gunnison River channel movement	Hydrology and aquatic systems
Hydrologic regime/surface water in Gunnison River	Hydrology and aquatic systems
Hydrologic regime in tributary creeks	Hydrology and aquatic systems
Presence/abundance of native fish species in the Gunnison River	Hydrology and aquatic systems
Aquatic habitat connectivity	Hydrology and aquatic systems
Cold-water fish composition	Hydrology and aquatic systems
Presence/abundance of key functional guilds in tributary creeks	Hydrology and aquatic systems
Cold-water aquatic habitat quality	Hydrology and aquatic systems

### ***Assumptions***

The analysis includes the following assumptions:

- Climatic fluctuation would continue to influence the health and productivity of priority vegetation on an annual basis.
- Short-term effects would occur over a time frame of two years or less and long-term effects would occur over longer than two years.

Implementing management actions for the following resources would have negligible or no impact on priority vegetation and are therefore not discussed in detail: Geological and Paleontological Resources, and air resources.

### **Direct and Indirect Impacts**

Priority species' habitats and priority vegetation would be affected under all alternatives, and the condition of habitats is directly linked to priority vegetation conditions and water quality and quantity (section 4.3.2.6, Soils and Water Quality). All fish, wildlife, and special status species are nested under at least one priority vegetation type, even if not explicitly stated. Thus, management for priority vegetation would encompass fish, wildlife, and special status species. Where management of specific fish, wildlife, or plant species would not be conducted on a habitat scale, concerns are discussed under section 4.3.2.2, Special Status Species and Natural Communities; and section 4.3.2.3, Non-Special Status Fish and Wildlife.

Acres of each priority vegetation community where surface-disturbing activities would be prohibited for each action alternative are presented in Table 4.3, Priority Vegetation Communities where Surface-Disturbing Activities Would Be Prohibited, by Alternative. In these areas, the BLM would reduce the likelihood of adverse impacts such as priority vegetation and habitat removal; fragmentation; loss of habitat for pollinators; conversion of areas to an earlier seral stage; and reduced vigor or productivity due to mechanical damage, soil compaction, or dust. Under all action alternatives, the greatest acreage that would be protected from these adverse impacts by prohibition of surface-disturbing activities would be within pinyon-juniper woodlands.

However, the greatest proportion of riparian habitat would be protected relative to the total acreage for that community.

**Table 4.3. Priority Vegetation Communities Where Surface-Disturbing Activities Would Be Prohibited, by Alternative**

Priority Vegetation	Acres by Alternative (% , See Note Below)			
	B	C	D	Proposed Plan Alternative
<b>Desert shrub/saltbush</b>	23,849 (51%)	19,145 (41%)	15,291 (33%)	9,981 (22%)
<b>Pinyon-juniper woodlands</b>	67,662 (52%)	53,395 (41%)	39,679 (31%)	34,446 (26%)
<b>Sagebrush shrublands</b>	10,622 (45%)	9,122 (38%)	1,966 (8%)	11,546 (7%)
<b>Ponderosa pine</b>	512 (67%)	460 (60%)	324 (42%)	324 (42%)
<b>Mountain shrublands</b>	1,089 (20%)	916 (17%)	549 (10%)	549 (10%)
<b>Riparian</b>	3,092 (94%)	3,001 (91%)	2,264 (69%)	929 (28%)

*Note: percentage indicates percentage of total acreage for that priority vegetation type within the decision area.*

*Source: BLM 2012i*

Prohibitions on surface-disturbing activities could reduce the likelihood of understory invasive species introduction or spread in desert shrub/saltbush, pinyon-juniper, and sagebrush shrublands. Weed introduction and spread along the Gunnison River and tributary creeks would also be reduced. By retaining vegetation, such prohibitions would also maintain the condition of most priority vegetation indicators in Table 4.2. In addition, trampling and human disturbance in seeps and springs would be reduced.

Alternative B would have the greatest acreage where surface-disturbing activities would be prohibited, and thus would provide the most protection from adverse impacts on priority species and vegetation.

Impacts from prohibition of surface-disturbing activities under Alternatives C, D, and the Proposed Plan Alternative would be similar to, but fewer than, those described for Alternative B due to the reduced acreage that would be protected under these alternatives.

Table 4.4, Priority Vegetation Communities Where Site-Specific Relocation Would Be Required, by Alternative, shows the size in acres of each priority vegetation community where SSR would be required for each action alternative. SSR restrictions could reduce impacts on PPSV, depending on where and how they were applied. In general, SSR restrictions would allow surface-disturbing activities, but the BLM would have the authority to require special constraints or to move the activity to protect sensitive resources (see Appendix B). As a result, the SSR restriction would be less protective of PPSV compared to areas where surface-disturbing activities would be prohibited.

The Colorado Plateau Rapid Ecoregional Assessment (CPREA) was completed after much of the analysis for the D-E NCA was already done. A review of this REA revealed that it contains no significant new information. However, it does support the PPSV framework used in the D-E NCA RMP planning.

PPSV monitoring proposed in the D-E NCA RMP will encompass the potential change agents identified for ecological systems discussed in the CPREA, including the effects of fire frequency and severity, invasive plants, and grazing. Additionally, the CPREA identifies certain wildlife species as species conservation elements. One of these species, desert bighorn sheep, is also identified by PPSV for the D-E NCA RMP. Important attributes listed for desert bighorn sheep in the CPREA are habitat, climate, and disease, all of which are encompassed in the PPSV

framework. PPSV measures will take into account potential change agents listed for desert bighorn sheep in the CPREA, including recreation, development, altered fire regime, invasive plants, direct take, and grazing. The CPREA shows a series of data layers that represent models of future potentials and are as valid as the data and assumptions used to create the models. The resource specialist is advised of this when he or she is evaluating a specific CPREA model. Models include projected near term (to the year 2025) status on a scale of “very high” to “very low” vulnerability to change agents and development, including energy, agricultural, urban, road, and recreation development.

Climate change models predict “very high” to “very low” potential for climate change in the range of years 2015 to 2060. There are also energy development models; however, these may be less predictive for the D-E NCA, as the NCA was withdrawn from mining, mineral leasing, mineral materials, and geothermal leasing in its designating legislation, the Omnibus Act. Each model considers drivers specifically identified for a particular conservation element (ecosystem or species). Because of the relatively large scale of the CPREA compared to the D-E NCA—the D-E NCA represents 0.004 percent of the Colorado Plateau area analyzed in the CPREA, with the D-E NCA = 210,000 acres and the Colorado Plateau = 46,855,140 acres—and the inherent uncertainty of modeling, specific CPREA analyses were not used to inform the discussion of environmental consequences in the D-E NCA RMP. However, specific CPREA model outcomes and maps may be used to help inform management decisions at the implementation level, although these should be reviewed by resource specialists.

**Table 4.4. Priority Vegetation Communities Where Site-Specific Relocation Would Be Required, by Alternative**

Priority Vegetation	Acres by Alternative (% , See Note Below)			
	B	C	D	Proposed Plan Alternative
<b>Desert shrub/saltbush</b>	3,015 (7%)	15,663 (34%)	9,113 (20%)	23,726 (51%)
<b>Pinyon-juniper woodlands</b>	13,426 (10%)	42,424 (33%)	32,964 (25%)	62,241 (48%)
<b>Sagebrush shrublands</b>	590 (2%)	2,152 (9%)	3,011 (13%)	9,818 (41%)
<b>Ponderosa pine</b>	26 (3%)	41 (5%)	177 (23%)	174 (23%)
<b>Mountain shrublands</b>	304 (6%)	373 (7%)	614 (11%)	740 (14%)
<b>Riparian</b>	16 (<1%)	167 (5%)	910 (28%)	2,239 (68%)

*Note: percentage indicates percentage of total acreage for that vegetation type within the decision area.*

*Source: BLM 2012i*

### ***Impacts from Climate Change Management***

Alternatives B, C, D, and the Proposed Plan Alternative would incorporate adaptive management, and the BLM would develop a risk management strategy for addressing climate change impacts. The strategy would include a vulnerability assessment for each PPSV element and its nested species. It would help direct implementation-level actions by identifying priorities and addressing PPSV goals in light of a changing climate. This would improve the likelihood of achieving the desired trends for each PPSV element over the long term.

### ***Impacts from Management of Priority Species and Vegetation***

For all priority vegetation communities, vegetation management would result in beneficial impacts by moving indicators toward achieving the desired trends to varying degrees under each alternative. Management would include restoration, planting and seeding, and removal of

undesired species. Restrictions in certain areas would protect priority species and vegetation from surface-disturbing or other disruptive activities that would move indicators away from desired trends. However, despite the BLM's best efforts, desired results may not always be achieved due to factors such as weather patterns, availability of seeds, lack of funding and manpower, or unproven restoration techniques. Vegetation treatments introduce disturbance and the potential to spread noxious and/or invasive weeds or to increase the need for treatments.

Under Alternative A, the lack of comprehensive planning for all priority species and vegetation, fish and wildlife, and special status species would result in vegetation management that is applied on a case-by-case basis and that would continue to result in potentially conflicting or inefficient actions. There would be no particular protection for priority species and vegetation beyond the Land Health Standards. Vegetation and weed treatments and habitat improvements would be carried out, changing vegetation conditions to some degree, but current trends would continue. Impacts on specific priority vegetation include:

- Desert shrub/saltbush: Within the desert shrub/saltbush habitat, vegetation treatments would continue on a case-by-case basis, with little expected activity due to the difficulty of achieving treatment objectives in this harsh environment. Existing trends for priority habitat and vegetation indicators in poor or fair condition would likely continue. Current or increasing levels of disturbance are expected to occur in intact portions of the desert shrub/saltbush community, likely increasing understory invasive species in these areas. Not allowing wildfire to be managed for multiple benefits (including resource benefits) in this community would reduce the risk of weed invasion or undesirable shifts in plant functional group composition and plant species composition. Seasons of grazing use would be determined on a case-by-case basis, which could cause impacts on plant functional group and species composition and understory invasive species.
- Pinyon-juniper: Under Alternative A, the BLM would continue to manage to improve wildlife habitat and meet range management and fuel objectives on a case-by-case basis. There would be localized alterations of age class structure, plant functional group composition, and understory invasive species as a result of these activities. Since indicators for pinyon-juniper woodlands are currently "good" and "very good," actions under Alternative A would likely maintain these conditions.
- Sagebrush shrublands: Alternative A does not include any specific management actions for sagebrush shrublands beyond continuing vegetation treatments on a case-by-case basis to improve wildlife habitat and meet range management and fuel objectives. Impacts could occur from new routes or other surface-disturbing activities, which could increase sagebrush fragmentation, reduce sagebrush extent and Gunnison sage-grouse winter habitat condition, alter plant functional group composition, or introduce or spread weeds. In addition, lack of focus on priority habitat and vegetation indicators for vegetation and habitat treatments could prevent movement toward desired trends as described above.
- Ponderosa pine: Impacts would be similar to those described for pinyon-juniper woodlands for this alternative. There would be no change to the number and size of stands, other than those induced by climate change.
- Mountain shrublands: Alternative A does not include any particular management actions for mountain shrublands vegetation or hydrology and aquatic systems beyond vegetation treatments on a case-by-case basis to improve wildlife habitat and meet range management and fuel objectives. As a result, it is likely that current conditions for these habitats would continue.

- **Riparian:** There would continue to be 209 acres of riparian areas under Alternative A protected by limiting livestock use to active movement only (see Glossary). Some protections from surface-disturbing activities would also be implemented. This would reduce impacts on stream functionality as well as maintain presence of saline grasslands and wetland obligate plant species and vegetation structural diversity. In addition, such protections would reduce the likelihood of invasive species introduction and spread on the Gunnison River and tributary creeks.
- **Seeps and springs:** Seeps and springs would continue to be high priority areas for weed control under Alternative A, which would reduce invasive species composition/dominance.

Under Alternative B, the BLM would rely on natural processes and restrictions on allowable uses to protect priority vegetation. Furthermore, the BLM would use the process described in Appendix A as a systematic planning approach for resource management, which would include measurable objectives for each priority vegetation type. With few exceptions, the BLM would not implement vegetation or weed treatments and plant material collection would be prohibited in forests and woodlands. The focus on passive management in this alternative could improve some indicators for priority vegetation communities, but it could degrade other indicators, as described for each community below:

- **Desert shrub/saltbush:** To a greater extent than under Alternative A, BLM prohibitions and limitations on certain disturbances in desert shrub/saltbush would prevent further damage to, and allow for, natural recovery of plant functional group composition, plant species composition/dominance, and understory invasive species. However, the BLM would place less emphasis on fire suppression in desert shrub/saltbush than under Alternative A. Substantially more acres would burn due to fire behavior that currently results in hundreds of acres burning despite application of full fire control measures within saltbush vegetation. This could cause impacts over a slightly larger area, including increased acreage of understory invasive species or negative trends for plant functional group composition due to the long recovery period and susceptibility of this vegetation community to weed invasion after fire (Howard 2003). By slightly increasing the acreage in early seral stage, fire in desert shrub/saltbush communities could further degrade the currently “poor” rating in this vegetation community.
- **Pinyon-juniper and ponderosa pine:** Restrictions in forests and woodlands would maintain and potentially increase the acreage classified as old-growth as compared with Alternative A. However, in a few cases, this would reduce opportunities to improve stand structure so that late seral characteristics are more rapidly developed.
- **Sagebrush shrublands:** Prohibition of new routes in unfragmented sagebrush shrublands would reduce sagebrush fragmentation.
- **Mountain shrublands:** Management under Alternative B would have the same impacts as described for mountain shrublands under Alternative A.
- **Riparian:** Riparian areas on 1,491 acres would be protected by limiting livestock use to active movement. In addition, 1,306 acres of the Gunnison River riparian corridor, including old cottonwood groves, would be protected from natural unplanned ignitions. Other restrictions—including limitations on campfires, routes, and camping and limitations on surface disturbance within 150 meters of streams—would reduce impacts on stream functionality, maintain the presence of saline grasslands and wetland obligate plant species, maintain existing vegetation structural diversity, and reduce the likelihood for invasive species introduction and

spread as compared with Alternative A. However, lack of vegetation treatments could allow existing invasive species on the Gunnison River and tributary creeks to spread, and relative cover of tamarisk would not be reduced. There would be less risk of negative impacts on indicators from unsuccessful treatments as compared with Alternative A.

- Springs and seeps: the BLM would prohibit surface disturbance within 150 meters (492 feet) of springs and seeps and would not allow any new spring developments. These measures would reduce impacts on groundwater hydrology, the presence of wetland obligate plants, and rare plant presence, and would likely reduce additional trampling and human disturbance as compared with Alternative A.
- Hydrology and aquatic systems: the BLM would continue to seek protections for instream flows and prevent actions within hydrology and aquatic systems that would further restrict natural migration of the Gunnison River and would seasonally prohibit in channel work to protect warm-water spawning species. Relative to measures under Alternative A, these measures would increase the presence/abundance of key functional aquatic guilds (warm and cold-water fish species) in tributary creeks.

Alternative C would focus on active and passive management to improve priority vegetation throughout the decision area. The objective would be to move indicators for priority vegetation that are currently in “fair” and “poor” condition toward “very good” and “good” condition, respectively. Active management actions are often necessary for moving priority vegetation toward desired future conditions, and since this alternative uses both passive and active techniques, it would have the greatest impact by protecting and improving priority vegetation.

Treatments in all vegetation communities under Alternative C could result in increasing the percent cover of native species and removing undesired species, which would affect plant functional group composition and reduce understory invasive species in desert shrub/saltbush, pinyon-juniper, sagebrush shrubland, and mountain shrubland communities. However, treatments are not always effective in meeting restoration objectives, and financial and labor resources are not always in place to implement them. In addition, the acreage of crested wheatgrass in pinyon-juniper and sagebrush shrublands could decrease and wetland obligate plants could increase in riparian and seep and spring communities. Over the long term, such changes could alter age class structure in sagebrush shrubland and mountain shrubland communities. Other impacts include:

- Desert shrub/saltbush: Treatments could lead to changes in plant species composition/dominance and the facilitation of a more natural disturbance regime. In addition, the BLM would minimize disturbance from authorized uses in intact desert shrub/saltbush and would limit grazing in degraded areas, which would reduce damage to plant functional group and plant species composition and reduce the introduction and spread of invasive plants as compared with Alternative A. Fire management in desert shrub/saltbush would be similar to that in Alternative A.
- Pinyon-juniper woodland: Vegetation treatments would not be conducted in old-growth or late seral pinyon-juniper and fires would be actively suppressed in these age classes. In contrast with Alternatives A and B, the combined effect of these actions would promote a more rapid movement toward achieving desired trends for pinyon-juniper indicators. Over the long term, such changes allow for increased populations of BLM sensitive plant species by improving habitat suitability.

- Sagebrush shrubland: Treatments could lead to changes in Gunnison sage-grouse winter habitat condition and increased extent of sagebrush. Prohibiting new route construction and closing existing routes in sagebrush parks would reduce sagebrush fragmentation. These actions would promote achievement of desired trends for sagebrush indicators at a faster rate than under Alternative A.
- Ponderosa pine: Treatments in ponderosa pine communities under Alternative C would reduce understory ladder fuels in FRCC 2 or 3 areas, which would allow the fire regime **condition class** to move toward FRCC I. In addition, planting and use of managed fire would also expand the extent of ponderosa stands. These improvements in ponderosa indicators would occur at a more rapid rate than under Alternative A.
- Riparian: Treatments could lead to changes in vegetation structural diversity and reduced invasive species composition on the Gunnison River and tributary creeks, reduce **fuel hazard** on the Gunnison River, and increase stream functionality. In addition, the BLM would protect riparian values by allowing **active movement** as the only livestock use on 1,800 acres of riparian habitat and by closing 18,434 acres to livestock use. Other restrictions would be implemented in riparian areas, although they would be less restrictive than under Alternative B. These restrictions on use would result in more protections to maintain existing conditions than under Alternative A and the overall complex of actions in riparian areas should result in more rapid movement of riparian indicators toward the desired trends.
- Seeps and springs: Reclamation, plantings, or weed treatments could result in reduced invasive species composition/dominance. Over the long term, such changes could lead to an increased number of seeps with rare plants by improving habitat suitability, thereby achieving desired trends for these indicators at a faster rate than under Alternatives A or B. Protective measures include a prohibition on surface-disturbance within 100 meters (328 feet) of springs and seeps, which would help maintain current status of invasive species, wetland obligate species, rare plants, and trampling indicators. However, new spring developments that are compatible with biological objectives would be allowed. These actions are more restrictive than those in Alternative A, and therefore more likely to maintain indicator status, but less restrictive than in Alternative B.
- Hydrology and aquatic systems: Actions to remove barriers to fish passage and river channel movement would achieve desired trends for channel movement, and aquatic habitat connectivity at a more rapid rate than under Alternatives A. Actions to limit disturbance to spawning fish would have the same results as Alternative B. Actions to protect instream flows would have the same results as Alternative A. Actions to engage in watershed restoration projects would potentially result in incremental improvements to fish habitat quality, and hydrologic regimes in both the Gunnison River and tributary creeks, which would not happen under Alternatives A. Overall, this complex of actions would result in more rapid attainment of aquatic indicator desired trends than Alternative A.

The objective in Alternative D would be to move indicators for priority vegetation that are currently in “fair” and “poor” condition toward “good” and “fair” condition, respectively. This would facilitate some changes to priority vegetation, although it is less ambitious than Alternative C. Impacts on specific priority vegetation and habitats include:

- Desert shrub/saltbush: As in Alternative A, the BLM would determine seasons of grazing use on a case-by-case basis. Other impacts would be similar to those described under Alternative C.

- Sagebrush shrublands: Under Alternative D, the BLM would allow route construction in unfragmented sagebrush parks only if projects are undertaken to reduce fragmentation elsewhere. This approach would reduce overall fragmentation by requiring mitigation, but unfragmented sagebrush would have an increased potential for fragmentation in affected areas. The BLM would also use mechanical treatments or prescribed fire to prevent pinyon-juniper expansion into sagebrush shrublands, which would help maintain plant functional group composition by preventing successional transition into a woodland state. Gunnison sage-grouse winter habitat condition and sagebrush extent would also move toward desired trends, as opposed to Alternative A, where this would not necessarily happen. Other impacts would be similar to those described under Alternative C.
- Ponderosa pine: Ponderosa pine stand number and size would be smaller than described in Alternative C, and a lesser area would have reduced ladder fuels since treatments would only occur in FRCC 3.
- Mountain shrublands: The BLM would use vegetation treatments to maintain age class diversity in mountain shrubland communities. As a result, current age class, vigor, and plant functional group composition trends would likely continue.
- Riparian: The BLM would protect riparian values by allowing active movement as the only livestock use on 525 acres of riparian habitat under Alternative D. Limited restrictions would be implemented in riparian areas, allowing for much more development and localized increases in invasive species and reductions in obligate wetland species to occur than under Alternatives B and C. Impacts from restoration actions, including the harvest of non-native vegetation, would be similar to those described for Alternative C.
- Seeps and springs: Impacts under Alternative D would be similar to those described for Alternative C, although Alternative D would have an increased likelihood for impacts on invasive species composition/dominance, presence of wetland obligate plant species, rare plant presence, and trampling and human disturbance from surface-disturbing activities.
- Hydrology and aquatic systems: Impacts under Alternative D would be similar to those described for Alternative C with the exception that there would be no improvement in aquatic habitat connectivity, because the BLM would not actively remove or modify man-made fish barriers between the Gunnison River and tributary creeks.

Under the Proposed Plan Alternative, the BLM would focus on active restoration, similarly to under Alternative D. The objective would be to move indicators to priority vegetation that are currently in “fair” and “poor” condition toward “good” condition, and maintain indicators that are in “good” and “very good” condition. Management of vegetation treatments, fire, recreation, and travel within priority vegetation and habitats would be more restrictive than Alternative D. Restrictions would facilitate improvement of, and reduce future damage to, priority vegetation, although to a lesser extent than Alternative C. Impacts on specific priority vegetation and habitats include:

- Desert shrub/saltbush: Impacts would be similar to those under Alternative C, with the exception of a slower rate of progress but also less chance of treatment failure, because vegetation treatments would be informed by research or pilot plots to help ensure their success. Use of unplanned fire would be allowed under certain circumstances, and limitations would be imposed on the grazing period to reduce impacts.



- Pinyon-juniper woodlands: Under the Proposed Plan Alternative, impacts would be similar to those under Alternative C in previously treated woodlands. In all other pinyon-juniper woodlands, impacts would be similar to those under Alternative B, with the exception that there would be less likelihood of burns occurring in ancient woodland. **Unplanned wildfires would be managed to improve plant composition and structure.**
- Sagebrush shrublands: Under the Proposed Plan Alternative, impacts on sagebrush age class structure, plant functional group composition, presence of crested wheatgrass, understory invasive species, and Gunnison sage-grouse winter habitat condition would be similar to those described under Alternative C. Impacts on sagebrush fragmentation and extent would be similar to those described under Alternative D; nevertheless, the Proposed Plan Alternative would increase the emphasis on reducing fragmentation and disturbance by not allowing new routes in sagebrush patches of 60 acres or larger.
- Ponderosa pine: Impacts under the Proposed Plan Alternative would be similar to those described for Alternative C, although there would be a lesser expansion of size and number of stands of ponderosa pine and an increased emphasis on retaining old-age trees and snags.
- Mountain shrublands: In most of the mountain shrubland community, the Proposed Plan Alternative would result in impacts similar to those described under Alternative D, with the additional use of unplanned fire to maintain or improve the current diversity of age classes.
- Riparian: In riparian areas, impacts on indicators under the Proposed Plan Alternative would be similar to those described under Alternative C. The Proposed Plan Alternative would provide slightly less protection against degradation from routes, livestock, and new developments **but would increase the emphasis on working with partners to reduce impacts.**
- Springs and seeps: Impacts under the Proposed Plan Alternative would be similar to those described for Alternative D, although the Proposed Plan Alternative would have a reduced likelihood for increased invasive species composition and dominance, reduced presence of wetland obligate plant species, reduced rare plant presence, and increased trampling and human disturbance from new spring developments, wells, and water catchments due to the increased restrictions and guidance on reclamation that would be applied under the Proposed Plan Alternative.
- Hydrology and aquatic systems: Impacts under the Proposed Plan Alternative would be similar to those described for Alternative C.

### ***Impacts from Management of Special Status Species and Natural Communities and Non-Special Status Fish and Wildlife***

Impacts on special status vegetation communities could occur from special status species and fish and wildlife habitat management across all alternatives. The type and nature of impacts would be similar to those described under Impacts from Management of Priority **Species** and Vegetation. In addition, restrictions to protect special status species would restrict surface-disturbing activities due to direct damage to vegetation or soils resulting in a reduced likelihood that indicators would move away from desired trends. Impacts from restrictions on surface-disturbing activities (including but not limited to those restrictions to protect special status species) are discussed above under Direct and Indirect Impacts (see Table 4.3). However, such restrictions could constrain vegetation management so that certain habitat objectives may be difficult to achieve in some areas.

Impacts from special status species and fish and wildlife management under Alternative A would be similar to those described for Priority Species and Vegetation under Alternative A.

Under Alternative B, management for special status species and fish and wildlife would impose additional spatial and temporal restrictions and protections compared with Alternative A. Under Alternative B, the BLM would implement measures to protect and prevent disturbance to sensitive vegetation communities, rare plants, bald eagle winter concentration areas, sensitive bats, sensitive reptiles, white-tailed prairie dog, Gunnison sage-grouse, special status and non-special status raptor nests and associated alternate nests, active kit fox dens, migratory bird nests, big game crucial winter range, and big game concentration areas. These measures include prohibitions on surface-disturbing activities in certain areas (spatial) and timing limitations (temporal), which would protect priority species and vegetation by limiting human use and surface-disturbing activities and reducing the likelihood of weed invasion and spread and habitat fragmentation in certain areas.

Under Alternative C, the nature and types of effects from special status species and fish and wildlife management would be similar to that described for Alternative B, although the BLM would emphasize active management techniques, such as rehabilitation and removing non-native species. Active management techniques under Alternative C would accelerate improvements in priority vegetation communities. As a result, there would be reduced understory invasive species, improved plant functional group composition and suitable habitat for prairie dogs, improved Gunnison sage-grouse winter habitat composition, reduced sagebrush fragmentation, and increased sagebrush extent. Overall, special status species management under Alternative C would provide the greatest protection to, and improvement of, priority vegetation communities.

The type of impacts from special status species and fish and wildlife management under Alternative D would be similar to those under Alternative C, although fewer protections would be implemented for special status species that would incidentally protect priority vegetation types. For example, SSR restrictions would not be applied in vulnerable (as defined by CNHP) vegetation communities and restrictions would generally apply to fewer species or with smaller buffers than under Alternative C.

The type of impacts from special status species and fish and wildlife management under the Proposed Plan Alternative would be similar to those under Alternative C. However, in some instances, management would offer fewer protections for priority vegetation communities.

### ***Impacts from Management of Noxious and Invasive Weeds***

Under all alternatives, the BLM (in concert with surrounding county governments) would implement relevant standard operating procedures and mitigation measures presented in the Final Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States PEIS (BLM 2007b) to ensure that impacts on priority vegetation from weed treatments are reduced. With proper implementation, weed treatments would eliminate or reduce noxious and invasive weeds and thereby establish desired plant functional group composition and meet land health standard 3. In addition, this would restore a more natural fire regime in areas where weeds have increased fire frequency.

Noxious and invasive weeds change desert shrub/saltbush, pinyon-juniper, sagebrush shrubland, mountain shrublands, and seep and spring communities by increasing the relative cover of invasive species. In addition, noxious and/or invasive weeds outcompete native plants for space, water nutrients, and other resources (Brooks and Lusk 2008). Noxious and invasive weeds

appear to be well-adapted to desert shrub/saltbush vegetation, and given the harshness of desert shrub/saltbush vegetation, it is the most difficult place to restore once noxious and invasive weeds arrive. Indirectly, this could change plant functional group composition in desert shrub/saltbush, pinyon-juniper, sagebrush shrubland, and mountain shrubland communities and could change plant species composition/dominance in desert shrub/saltbush. Many noxious and invasive weeds, such as cheatgrass, change the disturbance regime, making catastrophic fires more frequent and increasing the acreage of desert shrub/saltbush in an early seral stage (Brooks et al. 2004).

Noxious and invasive weeds could also compete with BLM sensitive plant species in pinyon-juniper woodlands and with rare plant species in seeps and springs and cause reductions in population sizes. More frequent fires resulting from weed invasion would change the age class structure in pinyon-juniper, sagebrush shrubland, and mountain shrubland communities, and could destroy BLM sensitive plant species populations in pinyon-juniper or rare plant populations in seeps and springs. Weed treatments would reduce invasive species in desert shrub/saltbush, pinyon-juniper, sagebrush shrubland, mountain shrubland, and seep and spring communities.

Other potential impacts from noxious and invasive weeds include:

- Sagebrush shrublands: More frequent fires, which could impact Gunnison sage-grouse winter habitat condition and sagebrush fragmentation and extent.
- Mountain shrublands: Reduced availability and quantity of shrubs, resulting in increased hedging of remaining shrubs and reduced vigor.
- Ponderosa pine: Altered understory species composition.
- Riparian and seeps and springs: Noxious and invasive weeds in riparian areas, such as tamarisk and understory weeds, would increase cover of invasive species on the Gunnison River and tributary creeks. In addition, increased cover of weeds, particularly tamarisk, would increase the fuel hazard on the Gunnison River since it is more flammable than native species and recovers rapidly from direct exposure to fire (Lambert, D'Antonio, and Dudley 2010). Subsequent fires could impact stream functionality by reducing the miles in proper functioning condition and would alter vegetation structural diversity by destroying native vegetation. Furthermore, by competing with native species, noxious and invasive weeds could reduce both the presence of saline grasslands in riparian areas and the presence of wetland obligate plants in riparian areas and seeps and springs.
- Hydrology and aquatic systems: Noxious and invasive weeds can affect hydrology and aquatic systems by altering the hydrologic regime in the Gunnison River and tributary creeks. Tamarisk removal can destabilize banks that lead to more active Gunnison River channel movement. In addition, weeds can alter cold-water aquatic habitat quality by changing the composition and amount of streamside vegetation, thereby changing the amount of shading that occurs.

Some noxious and invasive weed prevention measures would be required under Alternative A; however, current trends for weed introduction and spread would continue and impacts would continue to occur as described above for each priority vegetation community.

Despite additional weed prevention measures under Alternative B, the focus on passive management and allowing natural processes to continue would not halt the current trends of weed invasion and spread. Due to this passive focus, it is possible that impacts from weeds would be greater under Alternative B than under Alternative A.

Under Alternatives C, D and the Proposed Plan Alternative, the BLM would implement additional weed prevention measures, and would contain and eradicate a larger number of weed species than under Alternatives A and B.

### ***Impacts from Management of Fire and Fuels***

There are three effects pathways considered in this section: effects from fire (both wild and prescribed), effects from fuel treatments, and effects from fire suppression.

Fire is an important part of the natural ecosystem within the planning area and most of the priority vegetation communities are adapted to fire, at least to some degree. Some vegetation communities are fire-dependent (ponderosa pine), some are fire-tolerant (riparian), while others are fire-intolerant (desert shrub/saltbush). Fire in desert shrub/saltbush communities often leads to a conversion to dominance by exotic invasive species. More details on the impacts of this conversion are provided under Noxious and Invasive Weeds, above. Regardless, fire and fuel management could cause short- or long-term changes to the species composition and conditions of all priority vegetation communities (Brown and Smith 2000). In the short term, fire and fuel management remove vegetation and causes bare areas to be more susceptible to soil loss or weed invasion, thus increasing the relative cover of understory invasive species (Keeley, Lubin, and Fotheringham 2003). In the long term, fire and fuel management reduces dense vegetation and standing biomass, modifies vegetation mosaics, vegetation structure, and herbaceous understory, and alters nutrient cycling rates and patterns (Reich, Peterson, Wedin and Wrage 2001). The increase in soil nutrients following prescribed fire may favor some invasive plant species. Often, fire and fuel management increases vegetation diversity across a landscape and lowers the probability for an uncharacteristically large or severe wildfire. Such a large and severe fire would damage native vegetation and fragment some vegetation communities that are slow to recover (Brown and Smith 2000).

Fuel treatments and fire suppression activities would reduce the likelihood for a large-acreage fire and subsequent complete conversion to weeds. Such a conversion to a weed-dominated community would change the disturbance regime in desert shrub/saltbush by shortening the fire return interval.

Fuel treatments in desert shrub/saltbush, pinyon-juniper, sagebrush shrubland, and mountain shrubland communities would change plant functional group composition and reduce understory invasive species. In addition, fuel treatments would change plant species composition/dominance and reduce understory ladder fuels in ponderosa pine habitats.

By reducing the likelihood of a large-scale fire, fire suppression activities would retain the existing age class structure in pinyon-juniper, sagebrush shrubland, and mountain shrubland communities, plant functional group composition in desert shrub/saltbush, pinyon-juniper, sagebrush shrubland, and mountain shrubland, and plant species composition/dominance in desert shrub/saltbush in untreated areas adjacent to the treatments. However, fire suppression activities could inadvertently destroy BLM sensitive plant populations in pinyon-juniper woodlands through chemical, biological, or mechanical means. Other impacts specific to priority vegetation include:

- Sagebrush shrublands: Unplanned fire could reduce the acreage of Gunnison sage-grouse winter habitat and could cause fragmentation at a much larger scale. Planned and unplanned fire may also expand sagebrush parks into adjacent areas that are currently pinyon-juniper.

- **Riparian:** Fuel treatments would reduce the **fuel hazard** on the Gunnison River by removing non-native, exotic woody species, which could protect existing or improve vegetation structural diversity in some areas. Tamarisk removal could also help to improve stream functionality by increasing the miles in proper functioning condition. Fires could also destroy woody native species, reducing vegetation structural diversity.
- **Seeps and springs:** There would likely be negligible impacts from fire and fuel management on seep and spring indicators as fires are unlikely to occur in this priority vegetation community.
- **Hydrology and aquatic systems:** Depending on fire severity, planned and unplanned fire could impact the hydrologic regime in the Gunnison River and in tributary creeks by removing or destroying streamside vegetation that would slow the flow of runoff into nearby waterways. Soil erosion and subsequent sedimentation could impact cold-water fish composition.

Natural unplanned ignitions would be allowed to burn for multiple objectives (including resource benefit) within 167,772 acres of the D-E NCA under Alternative A (Table 4.5, Acres of Natural Unplanned Ignitions Allowed to Burn for Resource Benefit within Priority Vegetation Communities). The greatest acreage impact would be on pinyon-juniper woodlands, although impacts on ponderosa pine would be greatest in proportion to the total acreage for that community within the decision area. Mountain shrublands would be the least affected community. However, the possibility for catastrophic fire would exist, especially in areas where fire has historically been suppressed. Emergency stabilization and rehabilitation would be implemented as needed to meet resource objectives, which could help to revegetate areas with native species and reduce the likelihood of weed introduction or spread.

**Table 4.5. Acres of Natural Unplanned Ignitions Allowed to Burn for Resource Benefit within Priority Vegetation Communities**

Priority Vegetation	Acres by Alternative (%; See Note Below)				
	A	B	C	D	E
<b>Desert shrub/saltbush</b>	33,180 (71%)	46,323* (100%)	23,247 (50%)	16,265* (35%)	46,323 (100%)
<b>Pinyon-juniper woodlands</b>	113,015 (87%)	129,968* (100%)	125,841 (97%)	119,306* (92%)	129,968 (100%)
<b>Sagebrush shrublands</b>	16,407 (69%)	23,824 (100%)	23,824 (100%)	23,824 (100%)	23,824 (100%)
<b>Ponderosa pine</b>	673 (88%)	765 (100%)	765 (100%)	765 (100%)	765 (100%)
<b>Mountain shrubland</b>	1,947 (36%)	5,481 (100%)	5,481 (100%)	5,481 (100%)	5,481 (100%)
<b>Riparian</b>	2,492 (76%)	1,929* (59%)	1,783 (54%)	1,749* (53%)	1,929 (59%)
<i>Note: Percentage indicates percentage of total acreage for that priority vegetation type within the decision area.</i>					
<i>*Acreages for Draft alternatives adjusted slightly to account for vegetation consistently between Proposed Plan Alternative and the Draft alternatives.</i>					
<i>Source: BLM 2012i</i>					

Under Alternative B, fire management would be similar to that in Alternative A, although the BLM would allow natural unplanned ignitions to maximize natural fire effects on 208,568 acres (24 percent more than Alternative A). Natural unplanned ignitions would be allowed within entire acreage for nearly all vegetation communities under Alternative B with the exception of riparian, where natural unplanned ignitions would be allowed on only 60 percent of the acreage. The nature and types of impacts from fire would be as described above. While not prohibited, the BLM would have less of a focus on vegetation, weed, and emergency stabilization and rehabilitation treatments, which could allow for topsoil loss from erosion and subsequent sedimentation of aquatic habitats, impacts on cold-water aquatic habitat quality, and increased relative cover of

understory invasive species. However, with less active restoration, the BLM would reduce the likelihood of introducing new weeds, non-native species, and inappropriate ecotypes into an area.

Fire management under Alternative C would be similar to that under Alternative A, although the BLM would allow natural unplanned ignitions to maximize natural fire effects on 180,941 acres (8 percent more than Alternative A). Natural unplanned ignitions would be allowed within nearly all of the pinyon-juniper, ponderosa pine, mountain shrubland, and sagebrush shrubland communities. Desert shrub/saltbush and riparian communities would have the least acreage where natural unplanned ignitions would be allowed. The nature and types of impact from fire would be as described above. Emergency stabilization and rehabilitation treatments would be used to meet biological resource objectives, which would stabilize soils, reestablish native vegetation, and reduce the likelihood for weed introduction and spread. However, rehabilitation activities could increase the likelihood for introduction of new genetic material into an area.

Under Alternative D, fire management would be similar to that under Alternative A, although the BLM would allow natural unplanned ignitions to maximize natural fire effects on 167,390 acres (less than 1 percent fewer than Alternative A). Impacts on priority vegetation communities would be the same as described for Alternative C. Emergency stabilization and rehabilitation treatments would be the same as those described for Alternative A.

Impacts from natural unplanned ignitions under the Proposed Plan Alternative would be similar to those described for Alternative B, although ignitions would be intended to meet biological resource objectives. Other impacts would be similar to those described for Alternative D.

### ***Impacts from Management of Soils and Water Quality***

Soil and water quality management actions that restrict surface-disturbing activities would result in impacts as described above under Direct and Indirect Impacts and presented in Table 4.3.

Other impacts from restrictions include:

- Seeps and springs: Reduced tramping and human disturbance.
- Hydrology and aquatic systems: Improved aquatic species' habitat connectivity and cold-water aquatic species' habitat quality.

Under Alternative A, there would be some actions to protect soils and maintain or improve water quality, which would stabilize soils and vegetation and would protect aquatic systems. Determining soil suitability for surface-disturbing activities would help reduce the likelihood for impacts by maintaining adequate soil and vegetative cover where vegetation would be sensitive to removal.

Alternative B includes more protections for soils, including erosive soils, steep slopes, fragile soils, and biologic soil crusts, which would reduce impacts from surface-disturbing activities. Water protection measures under Alternative B could indirectly protect riparian vegetation communities and aquatic species' habitats by prohibiting surface-disturbing activities within a minimum distance of 50 meters (164 feet) from ephemeral streams and within water quality impaired areas.

Alternative C includes more protective measures for soils than Alternative B. As a result, impacts from surface-disturbing activities would be further reduced compared to those described for Alternative B. In contrast, water resources protections under Alternative C would be similar to,

although fewer than, under Alternative B, and the BLM would implement more measures to actively improve water quality under Alternative C. These measures would indirectly protect riparian vegetation types and aquatic species' habitats from surface-disturbing activities and would directly improve riparian communities, seeps and springs, and aquatic species' habitats.

Protections for soils and water and their resulting impacts under Alternatives D and the Proposed Plan Alternative would be similar to but fewer than under Alternative C, as there would be fewer protection measures under these alternatives. As a result, riparian vegetation and aquatic species' habitats would receive fewer protections from surface-disturbing activities.

### ***Impacts from Management of Cultural Resources***

Under all alternatives, cultural resources protections would provide incidental protections to priority vegetation in the affected areas by reducing the likelihood of surface-disturbing activities and the resulting impacts on vegetation as described under Direct and Indirect Impacts and presented in Table 4.3. However, cultural resources protections could preclude effective management of priority vegetation types in certain instances by preventing access or limiting surface disturbance.

Alternatives B and C would protect priority vegetation in the vicinity of sites allocated to Traditional Use, Public Use, Scientific Use, Conservation Use, and Experiment Use by prohibiting surface-disturbing activities within certain buffers. While this could provide some protections to vegetation, it would also limit the ability of the BLM to do vegetation treatments in the area that may be needed to meet priority vegetation objectives, particularly under Alternative C, where the BLM would have more flexibility to do such treatments. Alternative D would afford limited protections in the vicinity of such sites by applying SSR restrictions within those same buffers. However, SSR restrictions would provide the BLM with more ability to do vegetation treatments in these areas. The Proposed Plan Alternative would be the same as Alternative D for sites allocated to all but traditional use, where a smaller buffer would be implemented. Alternative A provides for no such protection and would be less protective of priority vegetation communities.

### ***Impacts from Management of Wilderness***

Management of the Dominguez Canyon Wilderness (66,280 acres) would prohibit certain types of vegetation manipulation, which could prevent movement toward desired future conditions in some cases. However, restrictions within these areas, such as closures and prohibitions, would protect existing priority vegetation from some human-caused disturbance and would prevent fragmentation of vegetation communities. The vegetation communities that would be most affected by wilderness management are pinyon-juniper woodlands and desert shrub/saltbush, as these are the two main vegetation types within the Dominguez Canyon Wilderness. Other vegetation types present in the area (in descending order) include sagebrush shrublands, riparian, ponderosa pine, and mountain shrubland.

Under Alternative A, there would be no guidance for management of the Dominguez Canyon Wilderness. As a result, management would be applied on a case-by-case basis, in accordance with designating legislation and BLM Manual 6340, *Management of Designated Wilderness Areas* (BLM 2012d), and would lack a landscape-level focus. This could lead to impacts on priority vegetation from potentially conflicting or inefficient actions.

Wilderness management under Alternative B would emphasize having few new developments in wilderness, but it also would not allow for vegetation improvement actions such as vegetation

treatments or post-fire rehabilitation. This management would maintain current community composition and age structure and would reduce the likelihood of fragmentation and impacts from surface-disturbing activities. However, non-addressed biological resource conditions would continue (including trends such as weed invasion or spread) in the absence of active management.

Under Alternative C, the BLM would allow some disturbances in wilderness, such as authorizing new developments and allowing for new catchment water developments. These would disturb vegetation and soils and could facilitate weed invasion and spread. However, the BLM would also implement habitat improvements such as vegetation treatments and post-fire rehabilitation. These would change community composition and age structure, and would reduce the likelihood for weed invasion or spread. Restoration and rehabilitation could introduce new genetic material into an area.

Wilderness management under Alternative D would be similar to under Alternative C. However, under Alternative D, the BLM would manage wilderness in three zones, with different objectives and management for each. In addition, the BLM would issue low and medium impact special recreation permits, which could allow for more surface-disturbing activities and the resulting impacts on priority vegetation communities in wilderness.

Wilderness management under the Proposed Plan Alternative would be similar to under Alternative D, although with more protections that would reduce impacts on priority vegetation. However, by prohibiting vegetation treatments in wilderness except where PPSV indicators are determined to be in “poor” or “fair” condition, the Proposed Plan Alternative could limit improvement of priority vegetation communities.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Areas managed to maintain wilderness characteristics would include restrictions on certain uses and activities, thus protecting priority vegetation from surface-disturbing activities, weed invasion and spread, and fragmentation. Depending on the management prescriptions, vegetation treatments could be limited within areas managed to maintain wilderness characteristics so that certain habitat objectives may be difficult to achieve.

Restrictions on activities within lands managed to maintain wilderness characteristics would reduce impacts on plant functional group composition in desert shrub/saltbush, pinyon-juniper, sagebrush shrubland, and mountain shrubland communities; reduce impacts on age class structure in pinyon-juniper, sagebrush shrubland, and mountain shrubland communities; and reduce the potential for understory invasive species spread in desert shrub/saltbush, pinyon-juniper, sagebrush shrubland, and mountain shrubland communities and weed invasion and spread along the Gunnison River and tributary creeks in riparian areas. Other impacts would also be reduced, including those on:

- Desert shrub/saltbush: plant species composition/dominance
- Pinyon-juniper woodlands: BLM sensitive plant species
- Sagebrush shrublands: Gunnison sage-grouse winter habitat condition and sagebrush fragmentation and extent
- Ponderosa pine: number and size of stands
- Riparian: stream functionality and vegetation structural diversity



- Seeps and springs: rare plant populations
- Hydrology and aquatic systems: hydrologic regime in the Gunnison River and tributary creeks and cold-water aquatic species' habitat quality

Limitations on certain vegetation manipulation techniques could also prevent movement toward desired trends for those same indicators.

No special protections as described above would be afforded under Alternatives A, C, or D.

Under Alternative B, the BLM would manage 21,816 acres of lands with wilderness characteristics to maintain those characteristics (Table 4.6, Impacts from Lands with Wilderness Characteristics Management on Priority Vegetation Communities). The greatest acreage protected by lands with wilderness characteristics would be for pinyon-juniper woodlands, although impacts on riparian vegetation would be greatest in proportion to the total acreage for that community within the decision area. Ponderosa pine and mountain shrubland communities would receive no protection from management of lands with wilderness characteristics. Management of areas with wilderness characteristics would reduce disturbance to priority vegetation by emphasizing non-motorized and non-mechanized recreation and prohibiting surface-disturbing activities and new developments. These restrictions would limit changes to community composition and age class structure, and would reduce the likelihood of fragmentation and introduction or spread of weeds.

Under the Proposed Plan Alternative, the BLM would manage 13,597 acres of lands with wilderness characteristics to maintain those characteristics (Table 4.6, Impacts from Lands with Wilderness Characteristics Management on Priority Vegetation Communities). Management of these areas would apply SSR restrictions, which would reduce disturbance to priority vegetation, but to a lesser extent than Alternative B. Impacts would also occur over a smaller area than under Alternative B.

**Table 4.6. Impacts from Lands with Wilderness Characteristics Management on Priority Vegetation Communities**

Priority Vegetation	Alternative B Acres (%; See Note Below)	Proposed Plan Alternative Acres (See Note Below)
Desert shrub/saltbush	658 (1%)	658 (1%)
Pinyon-juniper woodlands	18,665 (15%)	10,636 (8%)
Sagebrush shrublands	1,493 (6%)	1,362 (6%)
Ponderosa pine	0	0
Mountain shrubland	0	0
Riparian	994 (30%)	937 (28%)
<i>Note: Percentage indicates percentage of total acreage for that priority vegetation type within the decision area.</i>		
<i>Source: BLM 2012i</i>		

### ***Impacts from Management of Scenic Values***

In general, VRM Classes I and II would restrict surface-disturbing activities and prevent substantial changes to priority vegetation. However, VRM Class I restrictions could also constrain vegetation management so that certain priority habitat objectives may be difficult to achieve. Areas managed as VRM Class III would allow for more changes to priority vegetation, and therefore greater surface disturbance and likelihood for fragmentation, weed invasion and spread, and sedimentation.

Restrictions on lands managed as VRM Class I and II would reduce impacts on plant functional group composition in desert shrub/saltbush, pinyon-juniper, sagebrush shrubland, and mountain shrubland communities, and would reduce impacts on age class structure in pinyon-juniper, sagebrush shrubland, and mountain shrubland communities. Other impacts would also be reduced, including those on

- Desert shrub/saltbush: plant species composition/dominance;
- Pinyon-juniper: populations of BLM sensitive plant species;
- Sagebrush shrublands: Gunnison sage-grouse winter habitat and sagebrush fragmentation and extent;
- Ponderosa pine: number and size of stands;
- Riparian: structural diversity; and
- Hydrology and aquatic systems: hydrologic regimes on the Gunnison River and tributary creeks and cold-water aquatic habitat quality.

Under all alternatives, areas managed as VRM Class I and II would protect vegetation by limiting development and other surface-disturbing activities in these areas, unless they are able to meet the respective VRM class objective, as described above. Under Alternative A, 106,007 acres (50 percent of the D-E NCA), mostly in pinyon-juniper woodlands and desert shrub/saltbush, would be managed as VRM Class I or II. However, under all action alternatives, all lands within the D-E NCA would be managed as VRM Class I or II. While the distribution of acres as either VRM Class I or II would vary by alternative, the total acreage protected would be the same across all action alternatives. Alternative D would have the greatest acreage managed as VRM Class I, which would impose the greatest restrictions on surface-disturbing activities and would thus limit associated impacts on priority vegetation and habitats as described above. Of the action alternatives, Alternative C would have the fewest acres managed as Class I and thus would result in the greatest impacts on priority vegetation from surface-disturbing activities.

### ***Impacts from Management of Recreation***

Substantial analysis and planning is used to determine the locations and types of recreation that would occur within the planning area. However, some of these uses, such as non-motorized recreation or dispersed camping, are not subject to site-specific environmental review and monitoring requirements, and vegetation impacts would not be apparent until after damage has occurred. Examples of impacts on priority vegetation from recreation include vegetation disturbance due to trampling from humans and animals, fragmentation of vegetation communities, increased dust, soil compaction, and increased likelihood for weed introduction or spread. Impacts are more likely to occur in easily accessible areas where visitation would be highest. Fewer impacts on priority vegetation would occur in previously disturbed areas, although further impacts could still occur and priority vegetation objectives may not be met in these areas. Once discovered, the BLM would reduce impacts to the extent practicable and feasible through such measures as closures or use restrictions.

On-site management of recreation would be intended to facilitate recreation management and reduce impacts from recreation throughout the D-E NCA. For example, rules and guidelines within SRMAs and ERMAs would limit or control activities through specialized management tools such as designated campsites, permits, area closures, and limitations on number of users

and duration and types of uses. In these areas, high concentrations of human use (particularly in areas managed for trail-based recreation) could disturb soils and vegetation and would increase the likelihood of weed invasion and spread in designated recreation areas. Trail-based recreation could fragment priority vegetation communities. Furthermore, restrictions on certain activities in SRMAs could constrain vegetation management activities, limiting achievement of priority vegetation objectives. In addition, by imposing more controls over uses in SRMAs, impacts from prohibited or limited activities, such as off-highway vehicle use, could be displaced to other areas, resulting in increased surface disturbance and fragmentation of vegetation communities outside of the SRMA. Similar displacement of impacts could occur from management of ERMAs, where there is a higher potential for conflicts to develop between non-compatible recreation activities (section 4.4.1, Recreational Use). Over time, this could result in the displacement of visitors and increased impacts on priority vegetation outside of managed recreation areas.

Recreation (particularly trail-based recreation) in desert shrub/saltbush, pinyon-juniper, sagebrush shrubland, and mountain shrubland communities could increase the cover of understory invasive species. In addition, human use in certain areas could trample or destroy populations of BLM sensitive plant species in pinyon-juniper and rare plant species in seeps and springs and well as increase trampling and human disturbance in seeps and springs. Other impacts on priority vegetation and habitats include:

- Sagebrush shrublands: Developed trail-based recreation could degrade Gunnison sage-grouse winter habitat condition and increase sagebrush fragmentation.
- Riparian: Developed and undeveloped recreation could impact stream functionality and vegetation structural diversity through removal, trampling, or disturbance of vegetation and soils. Humans, horses, and vehicles could introduce or spread weeds on the Gunnison River and tributary creeks, which could increase **fuel hazard** on the Gunnison River. New recreational routes and recreational use on existing routes contribute to localized increases in invasive species composition and decreases in wetland obligate plants and can threaten the presence of saline grasslands.
- Hydrology and aquatic systems: Increased use along or within waterways associated with recreation could impact aquatic systems by reducing bank stabilization and water quality. This could alter aquatic conditions in areas. In addition, recreation could reduce cold-water aquatic habitat quality through human disturbances in riparian areas that lead to erosion and sedimentation of waterways.

Under Alternative A, the BLM would not manage recreation through the identification of SRMAs and ERMAs, and permit applications would be assessed on a case-by-case basis. By not managing for SRMAs or ERMAs, recreation would be more dispersed. Given expected increased recreation use, this would lead to difficulty in monitoring impacts on biological systems. Increased recreation use in the absence of RMA management could also lead to recreation conflict and subsequent damage to biological systems, as visitor expectations for quality recreation are not met. As a result, the likelihood for impacts caused by recreation would increase throughout the D-E NCA under Alternative A as population and recreation use increase. Impacts could include an increase in the likelihood for weed invasion or spread, habitat fragmentation, and surface-disturbing activities and their resulting impacts on vegetation, soils, and aquatic habitats.

Priority vegetation within RMAs by alternative are presented in Table 4.7, Priority Vegetation Communities within Recreation Management Areas. Under Alternative B, the BLM would only manage ERMAs, which would aim to draw users to certain areas but could displace impacts

outside of managed recreation areas as described above. While the greatest acreage impact within ERMA would be on pinyon-juniper woodland and desert shrub/saltbush communities, impacts on ponderosa pine and mountain shrubland communities would be greatest in proportion to the total acreages for those communities within the decision area. ERMA management in Alternative B would be geared to dispersed, multiple-use recreation. This management approach would lead to similar impacts as described under Alternative A, although to a lesser extent.

**Table 4.7. Priority Vegetation Communities within Recreation Management Areas**

Priority Vegetation	Acres by Alternative (% See Note Below)			
	Alt B	Alt C	Alt D	Proposed Plan Alternative
<b>Desert Shrub/Saltbush</b>				
<b>SRMA</b>	0	2,000 (4%)	31,181 (67%)	2,328 (5%)
<b>ERMA</b>	32,201 (69%)	0	356 (0%)	29,869 (64%)
<b>Pinyon-Juniper Woodlands</b>				
<b>SRMA</b>	0	20,775 (16%)	42,645 (33%)	17,771 (14%)
<b>ERMA</b>	53,551 (41%)	0	28,948 (22%)	51,208 (39%)
<b>Sagebrush Shrublands</b>				
<b>SRMA</b>	0	10,192 (43%)	10,992 (46%)	9,024 (38%)
<b>ERMA</b>	16,744 (70%)	0	6,420 (27%)	10,197 (43%)
<b>Ponderosa Pine</b>				
<b>SRMA</b>	0	729 (95%)	566 (74%)	556 (72%)
<b>ERMA</b>	729 (95%)	0	0	10 (1%)
<b>Mountain Shrubland</b>				
<b>SRMA</b>	0	3,513 (64%)	2,779 (51%)	2,675 (49%)
<b>ERMA</b>	4,495 (82%)	0	878 (16%)	1,949 (36%)
<b>Riparian</b>				
<b>SRMA</b>	0	1,335 (41%)	2,204 (67%)	1,507 (45%)
<b>ERMA</b>	2,170 (66%)	0	900 (27%)	664 (20%)
<i>Note: Percentage indicates percentage of total acreage for that priority vegetation type within the decision area.</i>				
<i>Source: BLM 2012i</i>				

Under Alternative C, the BLM would only manage SRMAs, which would aim to draw users to these areas with specific recreation outcomes. However, the types of outcomes and settings that would be managed for in these SRMAs are consistent with improved biological conditions. Therefore, impacts within these SRMAs would be minimal or lead to progress toward desired future conditions. The greatest acreage impact would be on pinyon-juniper woodland and sagebrush shrubland communities, although impacts on ponderosa pine and mountain shrubland communities would be greatest in proportion to the total acreages for those communities within the decision area.

The Alternative C recreation management approach could displace non-targeted dispersed recreation outside of managed recreation areas, with subsequent impacts in those areas similar to those in Alternative A.

Under Alternative D, the BLM would manage much of the D-E NCA as SRMAs. SRMA management, particularly in trail-based recreation SRMAs in Cactus Park, Ninemile Hill and Sawmill Mesa, would lead to increased and concentrated use in these areas. Impacts include increase likelihood for weed introduction and spread and fragmentation, as described above. Non-trail-based recreation SRMAs in Gunnison River, Gunnison Slopes, Cottonwood Canyon and Escalante Canyon would not lead to major impacts on priority species and vegetation. While

the greatest acreage impact would be on pinyon-juniper woodland and desert shrub/saltbush communities, impacts on ponderosa pine would be greatest in proportion to the total acreage for that community within the decision area.

Under the Proposed Plan Alternative, more of the D-E NCA would be managed as either an SRMA or ERMA than under any of the other alternatives, except for Alternative D, which could potentially reduce impacts on priority vegetation and habitats by providing a variety of recreation experiences and options. Increased management of these areas would improve the ability to monitor for impacts on vegetation and attract visitors to previously disturbed sites rather than dispersed areas. Impacts from trail-based recreation in the Cactus Park SRMA would be the same as described above for Alternative D. While the greatest acreage impact would be on pinyon-juniper woodland and desert shrub/saltbush communities, impacts on sagebrush shrubland, ponderosa pine, and mountain shrubland communities would be greatest in proportion to the total acreages for those communities within the decision area.

### ***Impacts from Management of Scientific Use***

Scientific research is used to inform management decisions and could improve management decisions for priority vegetation. There would be localized impacts on priority vegetation from trial plots or surface-disturbing or destructive sampling techniques.

Scientific research under Alternative A would call for the BLM to continue basic trend and baseline monitoring that informs management decisions; this could improve management of priority vegetation and help target areas where indicators need improvement.

Alternative B would encourage research that addresses priority vegetation, which would allow for more opportunities for monitoring and discovery of areas where indicators need improvement. However, because of the overall hands-off approach to management in the D-E NCA, the BLM would have fewer tools to react to negatively trending data.

Scientific research under Alternatives C, D and the Proposed Plan Alternative would be focused on the effects of active management decisions and informing adaptive management strategies and decisions. This would allow the BLM to use dynamic management strategies to benefit priority and vegetation.

### ***Impacts from Management of Educational Use***

Educating the public on the values and services of priority vegetation management could help prevent human-caused impacts on these communities through increased awareness. However, in areas where education is highlighted, visitor use, and the resulting impacts on priority vegetation as described above under Recreation, could increase. Impacts from increased opportunities to learn about priority vegetation as well as increased visitor use would be greater under Alternatives C, D, and the Proposed Plan Alternative.

### ***Impacts from Management of Livestock Grazing***

Livestock grazing that is managed to achieve Land Health Standards may not compromise achievement of priority vegetation objectives. However, even under proper management, livestock grazing could cause impacts on priority vegetation to varying degrees. Impacts from poorly managed livestock grazing would be greater in magnitude and extent than those from properly managed grazing.

Impacts from livestock grazing could include changes to vegetation plant species and functional group composition through vegetation removal, disturbance, and trampling, and increased potential for weed introduction and spread. Grazing can also reduce litter and fine fuel loading, which could alter fire size and severity. Restrictions on grazing in certain areas can reduce these impacts.

Water developments would permanently remove vegetation within the development's footprint and would concentrate livestock in certain areas, thus reducing associated vegetation cover and increasing the likelihood for weed invasion and spread. Range improvements could also improve livestock distribution and reduce severe utilization levels. This would reduce vegetation disturbance across the area and weed introduction and spread. The effectiveness of range improvements at improving livestock control and reducing grazing impacts is not always assured, however. Past range developments have sometimes failed to work due to problems with location, design, funding, or maintenance.

Under all alternatives, the BLM could, as needed, change permit terms, adjust AUMs for livestock, implement grazing systems, require rotation or deferment, impose utilization limits, and implement additional measures such as range improvements as necessary and feasible to reduce impacts. Intensive livestock management can reduce the magnitude of the impacts listed above by allowing vegetation to adequately rest and recover between periods of domestic grazing. However damage may occur to vegetation until detected and changes in management are implemented.

Livestock grazing could affect desert shrub/saltbush, pinyon-juniper, sagebrush shrubland, and mountain shrubland communities by altering plant functional group composition and by increasing the likelihood for weed introduction and spread. Weed introduction and spread would also affect seeps and springs. Livestock grazing affects fuel distribution and availability at large scales and thus could alter disturbance regimes in desert shrub/saltbush and ponderosa pine communities.

Other impacts include:

- Desert shrub/saltbush: changes to plant species composition/dominance
- Pinyon-juniper: trampling or destroying BLM sensitive plant populations
- Sagebrush shrublands: changes to age class structure and Gunnison sage-grouse winter habitat condition and increased habitat fragmentation
- Mountain shrublands: reduced vigor
- Riparian: trampling or destroying wetland obligate plants
- Seep and spring: trampling seep and spring communities, including wetland obligate and rare plants, and changes to groundwater or surface water hydrology in seeps and springs from spring development and maintenance

Livestock often use riparian areas for water and shade, which may cause greater impacts on these areas by concentrating livestock use. Livestock could cause impacts by altering stream functionality and vegetation structural diversity. Livestock could spread invasive species on the Gunnison River and tributary creeks and thus would increase the fuel hazard on the Gunnison River.

Livestock in proximity to aquatic systems could change cold-water aquatic species' habitat quality through nutrient inputs from manure (Larsen, Miner, Buckhouse, and Moore 1994). In addition, livestock grazing could cause changes to aquatic connectivity when they are allowed adjacent to or within aquatic systems by altering bank stabilization and water quality and thus altering habitat conditions in certain areas. Water developments near tributary creeks could affect the hydrologic regime of these systems by withdrawing water.

A summary of acreage-based livestock grazing allocations in priority vegetation by alternative are presented in Tables 4.8 through 4.12, Livestock Grazing Allocations in Priority Vegetation Communities, below.

**Table 4.8. Livestock Grazing Allocations in Priority Vegetation Communities, Alternative A**

Priority Vegetation	Open (%)	Active Movement Only (%)	Closed (%)	Unallotted (%)
<b>Desert Shrub/Saltbush</b>	40,202 (87%)	3,216 (7%)	0	2,925 (6%)
<b>Pinyon-Juniper Woodlands</b>	124,452 (96%)	4,647 (4%)	0	866 (<1%)
<b>Sagebrush Shrublands</b>	23,823 (99.9%)	1 (<1%)	0	0
<b>Ponderosa Pine</b>	141 (18%)	66 (9%)	0	557 (73%)
<b>Mountain Shrublands</b>	5,481 (100%)	0	0	0
<b>Riparian</b>	2,322 (71%)	209 (6%)	0	701 (21%)

*Note: Percentage indicates percentage of total acreage for that priority vegetation type within the decision area.*

*Source: BLM 2012i*

Grazing under Alternative A would be restricted or adjusted where it is contributing to failure to meet Land Health Standards and periodic rest from grazing would be required. In addition, the BLM would also impose limitations on utilization of key forage species on 13,978 acres. These actions would reduce impacts from livestock grazing. Under Alternative A, pinyon-juniper woodlands would have the greatest acreage affected from livestock grazing. However, this type of vegetation is generally not grazed much given the lack of understory forage production. In addition, nearly all of the sagebrush shrublands and mountain shrubland communities would be open to grazing under this alternative, and thus would also likely sustain more impacts than under the other action alternatives. Less than 10 percent of each of the vegetation communities would be open to **active movement** only, and impacts would be reduced in these areas. The fewest impacts would occur in the ponderosa pine and riparian communities. No acres would be closed to grazing under this alternative.

**Table 4.9. Livestock Grazing Allocations in Priority Vegetation Communities, Alternative B**

Priority Vegetation	Open (%)	Active Movement Only (%)	Closed (%)
<b>Desert Shrub/Saltbush</b>	27,652 (60%)	2,936 (6%)	15,755 (34%)
<b>Pinyon-Juniper Woodlands</b>	118,230 (91%)	7,799 (6%)	3,935 (3%)
<b>Sagebrush Shrublands</b>	23,676 (99%)	148 (<1%)	0
<b>Ponderosa Pine</b>	12 (2%)	195 (25%)	557 (73%)
<b>Mountain Shrublands</b>	5,389 (98%)	91 (3%)	0
<b>Riparian</b>	433 (13%)	1,491 (45%)	1,308 (40%)

*Note: Percentage indicates percentage of total acreage for that priority vegetation type within the decision area.*

*Source: BLM 2012i*

Under Alternative B, the BLM would emphasize no new construction of livestock facilities. This would reduce disturbance to vegetation and soils and the likelihood of weed invasion and

spread. Several BLM management actions would aim to prevent overgrazing impacts (including evaluating AUM reductions and/or closing part of all of allotment(s) if grazing prevents achievement of biological objectives) and would allow vegetation to recover from grazing, thereby improving vegetation conditions. Under Alternative B, the BLM would limit utilization to 35 percent of current year's production of perennial grass species. Impacts on priority vegetation communities in areas open to grazing would be similar to but fewer than those described for Alternative A. The largest proportion of acres open to **active movement** only would occur in the ponderosa pine and riparian communities, and impacts from grazing would be reduced in these areas. In all other vegetation communities, less than 10 percent of each community would be open to **active movement** only. The largest number of acres closed to grazing under Alternative B would occur in desert shrub/saltbush communities. Closure of allotments in desert shrub/saltbush communities would speed recovery to desired future conditions. In addition, ponderosa pine would have the largest proportion of its total acreage that would be closed to grazing, and would therefore experience reduced impacts.

**Table 4.10. Livestock Grazing Allocations in Priority Vegetation Communities, Alternative C**

Priority Vegetation	Open (%)	Active Movement Only (%)	Closed (%)
Desert Shrub/saltbush	39,689 (86%)	6,296 (14%)	357 (1%)
Pinyon-Juniper woodlands	121,505 (93)	8,050 (6%)	410 (<1%)
Sagebrush Shrublands	23,686 (99%)	138 (1%)	0
Ponderosa Pine	12 (2%)	753 (98%)	0
Mountain Shrublands	5,473 (99.9%)	8 (<1%)	0
Riparian	1,285 (39%)	1,800 (55%)	147 (5%)
<i>Note: Percentage indicates percentage of total acreage for that priority vegetation type within the decision area.</i>			
<i>Source: BLM 2012i</i>			

Under Alternative C, the BLM would manage more intensively and implement closures only when biological resource objectives are not met. For example, in areas meeting Land Health Standards, utilization levels would be limited to 50 percent of current year's growth of perennial grass species. In areas not meeting standards utilization levels would be limited to 35 percent of the current year's growth of perennial grasses. As a result of this management strategy, there could be a delay between impacts occurring and when they are remedied. Under Alternative C, impacts on priority vegetation communities from areas open to grazing would be similar to but fewer than those described for Alternative A, due to reduced acreage that would be open under this alternative. The greatest percentage of acres open to **active movement** only would be in the ponderosa pine and riparian communities under this alternative, and impacts from grazing would be reduced in these areas. In all other vegetation communities, less than 15 percent of each community would be open to **active movement** only. The largest number of acres closed to grazing under Alternative C would occur in pinyon-juniper communities. In addition, the riparian community would have the largest proportion of its total acreage that would be closed to grazing, and would therefore experience reduced impacts.

**Table 4.11. Livestock Grazing Allocations in Priority Vegetation Communities, Alternative D**

Priority Vegetation	Open (%)	Active Movement Only (%)	Closed (%)
Desert Shrub/Saltbush	44,435 (96%)	1,550 (3%)	357 (1%)
Pinyon-Juniper Woodlands	126,102 (97%)	3,863 (3%)	0
Sagebrush Shrublands	23,686 (99%)	138 (1%)	0



Priority Vegetation	Open (%)	Active Movement Only (%)	Closed (%)
<b>Ponderosa Pine</b>	330 (43%)	435 (57%)	0
<b>Mountain Shrublands</b>	5,481 (100%)	0	0
<b>Riparian</b>	2,707 (82%)	525 (16%)	0
<i>Note: Percentage indicates percentage of total acreage for that priority vegetation type within the decision area</i>			
<i>Source: BLM 2012i</i>			

Under Alternative D, the BLM would limit utilization to 60 percent of current year's production of perennial grass species. Such measures would increase the likelihood for impacts on priority vegetation, such that recovery or improvement would be unlikely. Under Alternative D, pinyon-juniper woodlands would have the greatest acreage affected from livestock grazing. In addition, nearly all of the sagebrush shrublands, pinyon-juniper woodlands, and mountain shrubland communities would be open to grazing under this alternative, and thus would also likely sustain substantial impacts. More than half of the ponderosa pine vegetation community would be open to active movement only, and impacts would be reduced in these areas. Less than 1 percent of the desert shrub/saltbush community would be closed to grazing but for all other vegetation communities, no acres would be closed to grazing.

**Table 4.12. Livestock Grazing Allocations in Priority Vegetation Communities, Proposed Plan Alternative**

Priority Vegetation	Open (%)	Active Movement Only (%)	Closed (%)
<b>Desert Shrub/Saltbush</b>	40,180 (87%)	3,299 (7%)	2,862 (6%)
<b>Pinyon-Juniper Woodlands</b>	121,852 (94%)	7,557 (6%)	555 (<1%)
<b>Sagebrush Shrublands</b>	23,686 (99%)	138 (1%)	0
<b>Ponderosa Pine</b>	246 (32%)	518 (68%)	0
<b>Mountain Shrublands</b>	5,481 (100%)	0	0
<b>Riparian</b>	1,867 (57%)	983 (30%)	424 (13%)
<i>Note: Percentage indicates percentage of total acreage for that priority vegetation type within the decision area</i>			
<i>Source: BLM 2012i</i>			

Under the Proposed Plan Alternative, the BLM would include seasonal use limits for palatable forage that reflect the BMPs and are consistent with meeting land health standards or other biological objectives. Impacts from these actions would be similar to but less than those described for Alternative C. This is because they would allow the flexibility to meet resource objectives according to best available science. Impacts on desert shrub/saltbush from limitations on grazing during the critical growth period would be similar to those described for Alternative C. Under the Proposed Plan Alternative, impacts on priority vegetation communities from areas open to grazing would be similar to but fewer than those described for Alternative A due to the reduced acreage that would be open under this alternative. In addition, nearly all of the sagebrush shrublands and mountain shrubland communities would be open to grazing under this alternative, and thus would also likely sustain substantial impacts. Approximately 68 percent of the ponderosa pine community would be open to active movement only, and impacts from grazing would be reduced in these areas. Desert shrub/saltbush and riparian communities would have the largest acreage closed to grazing under this alternative.

### ***Impacts from Management of Transportation and Travel***

Substantial analysis and planning is used to determine the locations and types of vehicle use and use of authorized and unauthorized routes within the planning area, although often times impacts on vegetation are not apparent until after damage has occurred. Examples of impacts on priority vegetation from vehicle use include vegetation disturbance due to breakage or crushing from feet, hooves, or vehicles; vegetation removal; fragmentation of vegetation communities; increased dust; and increased likelihood for weed introduction or spread (Ouren et al. 2007). This could lead to degradation of plant species and functional group composition, increases in invasive species, presence and abundance of sensitive plant species, fragmentation, and reductions in stream functionality. Impacts are more likely to occur in easily accessible areas or in designated recreation areas where visitation would be high (see impacts from Recreation above). Fewer impacts on vegetation would occur along designated routes, because past and current use has already impacted these areas, although further impacts could still occur, especially if use levels increase. Once discovered, the BLM would reduce impacts on the extent practicable and feasible through such measures as closures, rehabilitation, or use restrictions. Such measures would remove sources of surface disturbance, would allow vegetation to recover, and would reduce fragmentation throughout the decision area. In general, reduced fragmentation would facilitate the maintenance of larger sagebrush patch sizes in the decision area.

Travel within the decision area could impact desert shrub/saltbush, pinyon-juniper, sagebrush shrubland, mountain shrubland, and seep and spring communities by increasing the likelihood for weed introduction and spread. This could increase the potential for an altered disturbance regime in desert shrub/saltbush. Travel could also increase the potential for weed introduction and spread along the Gunnison River and tributary creeks in riparian areas and increase trampling and human disturbance in seeps and springs. Vegetation removal for routes could: affect age class structure in pinyon-juniper, sagebrush shrubland, and mountain shrubland communities and could destroy BLM sensitive plant populations in pinyon-juniper and rare plant populations in seeps and springs. Other impacts from vegetation removal include:

- Sagebrush shrublands: an increase sagebrush fragmentation and altered Gunnison sage-grouse winter habitat condition;
- Ponderosa pine: a reduction in the number and size of stands;
- Riparian: altered functionality and vegetation structural diversity;
- Seeps and springs: altered surface water hydrology; and
- Hydrology and aquatic systems: increased erosion and sedimentation of waterways, thereby affecting cold-water habitat quality.

Access to a given area would depend upon route locations, which could affect the BLM's ability to suppress fires or treat fuels, thereby impacting fire regime condition class in ponderosa pine and riparian areas. In addition, routes crossing or adjacent to aquatic systems could affect aquatic species' habitat quality and reduce aquatic species' habitat connectivity between tributary creeks and the Gunnison River.

Impacts from travel management on priority vegetation by alternative are presented in Table 4.13, Travel Management Impacts on Priority Vegetation Communities, below.

**Table 4.13. Travel Management Impacts on Priority Vegetation Communities**

Priority Vegetation	Miles of Routes by Alternative				
	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alternative
<b>Desert Shrub/Saltbush</b>					
<b>Open</b>	143	66	49	30	121
<b>Closed</b>	25	101	119	139	47
<b>Pinyon-Juniper Woodlands</b>					
<b>Open</b>	228	124	85	141	197
<b>Closed</b>	58	162	201	145	89
<b>Sagebrush Shrublands</b>					
<b>Open</b>	117	68	57	76	87
<b>Closed</b>	9	58	69	51	38
<b>Ponderosa Pine</b>					
<b>Open</b>	1	0	0	0	1
<b>Closed</b>	0	1	1	1	0
<b>Mountain Shrublands</b>					
<b>Open</b>	28	15	13	17	18
<b>Closed</b>	1	14	16	12	11
<b>Riparian</b>					
<b>Open</b>	13	4	4	7	9
<b>Closed</b>	1	10	10	7	5

Source: BLM 2012i

Under all alternatives, the greatest mileage of routes would be open in pinyon-juniper woodland, sagebrush shrubland, and desert shrub/saltbush communities, and there would be minimal impacts on ponderosa pine communities. All action alternatives would have fewer miles of open routes than Alternative A, and the greatest mileage of closed routes would occur under Alternative C. By decreasing the miles of routes, impacts from travel management would be reduced for priority vegetation and indicators as discussed above. Alternatives B, D, and the Proposed Plan Alternative would be relatively similar in terms of their impacts on priority vegetation communities.

In addition, all action alternatives would have a larger number of sagebrush patches greater than 60 acres in size and the overall patch sizes would be larger than under Alternative A. Alternative B would have the greatest number of sagebrush patches larger than 60 acres and the largest acreage contained within these patches. Alternatives C, D, and the Proposed Plan Alternative would be relatively similar in terms of their impact on sagebrush patch size, leading to less fragmentation than currently exists today in sagebrush habitat greater than 60 acres, but leading to more fragmentation in these areas than under Alternative B.

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

Surface-disturbing activities associated with land use authorizations could result in removal and fragmentation of priority vegetation and conversion of areas to an earlier seral stage. The remaining vegetation could have altered vegetation conditions, such as reduced vigor or productivity due to mechanical damage, soil compaction, and dust. Soil compaction would inhibit revegetation efforts. Vegetation loss is caused by road construction and use and construction within ROWs. Most of the footprints of permitted activities are localized and cover a small area, but ROWs can be linear and may stretch for miles, fragmenting vegetation communities and possibly spreading weeds over large distances. ROW avoidance and exclusion areas would reduce or avoid impacts on priority vegetation, and ROW corridors would concentrate placement

of large linear facilities and other ROW development in less sensitive areas, reducing the total acreage of vegetation disturbance.

Acquisitions would increase the acreage and continuity of priority vegetation that would be subject to BLM management in the decision area. This could provide increased protection and more efficient management of priority vegetation communities on a landscape scale.

ROW construction and maintenance activities could increase the likelihood of understory invasive species introduction or spread in desert shrub/saltbush, pinyon-juniper, and sagebrush shrublands. Weeds could also be introduced or spread along the Gunnison River and tributary creeks. This could then increase **fuel hazard** on the Gunnison River. In addition, by removing and fragmenting vegetation communities, surface-disturbing activities also have the potential to injure or remove BLM sensitive plant species in pinyon-juniper and rare plant species in seeps and springs. Other impacts from surface-disturbing activities include:

- Ponderosa pine: reduced number and size of stands;
- Seeps and springs: increased trampling and human disturbance;
- Riparian: reduced stream functionality; and
- Hydrology and aquatic systems: changes to the hydrologic regime in the Gunnison River and tributary creeks.

Except for weed spread, lands and realty management actions are unlikely to have a measurable effect on mountain shrubland community indicators.

Land acquisitions could increase the presence of saline grasslands in riparian areas if they are present on the acquired parcels. Further, acquisitions of lands with rivers and streams could improve Gunnison River channel movement and aquatic habitat connectivity through BLM management actions.

Lands and realty management actions under Alternative A would designate 59,936 acres as unsuitable for public utilities, which would reduce the likelihood of impacts from surface-disturbing activities, weed invasion and spread, and fragmentation in these areas. Two utility corridors would be managed within the D-E NCA; within these areas, vegetation would be removed, soil disturbed, and weeds would be more likely to be introduced or spread. However, by concentrating utilities and other facilities in these areas, the BLM would reduce widespread impacts and fragmentation of priority habitat and vegetation. Impacts from ROW avoidance and exclusion areas are presented in Table 4.14, Acres of Priority Vegetation Communities Managed as ROW Avoidance and Exclusion, Alternatives A and D, below.

Table 4.14. Acres of Priority Vegetation Communities Managed as ROW Avoidance and Exclusion

Priority Vegetation	Acres by Alternative (%) <sup>1</sup>				
	Alt A	Alt B <sup>2</sup>	Alt C <sup>2</sup>	Alt D	Proposed Plan Alternative <sup>2</sup>
Desert Shrub/Saltbush					
ROW Avoidance	216 (<1%)	Under Alternative B the entire decision area would be managed as a ROW exclusion area.	Under Alternative C, the decision area would be managed as a ROW exclusion area except for 926 acres that would be managed as part of a designated utility corridor.	25,590 (55%)	Under the Proposed Plan Alternative, the decision area would be managed as a ROW exclusion area except for 1,022 acres along Highways 50 and 141 that would be managed as ROW avoidance areas.
ROW Exclusion	15,752 (34%)			20,756 (45%)	
Pinyon-Juniper Woodlands					
ROW Avoidance	10,083 (8%)	Under Alternative B the entire decision area would be managed as a ROW exclusion area.	Under Alternative C, the decision area would be managed as a ROW exclusion area except for 926 acres that would be managed as part of a designated utility corridor.	65,935 (51%)	Under the Proposed Plan Alternative, the decision area would be managed as a ROW exclusion area except for 1,022 acres along Highways 50 and 141 that would be managed as ROW avoidance areas.
ROW Exclusion	62,662 (48%)			64,035 (49%)	
Sagebrush Shrublands					
ROW Avoidance	1,265 (5%)	Under Alternative B the entire decision area would be managed as a ROW exclusion area.	Under Alternative C, the decision area would be managed as a ROW exclusion area except for 926 acres that would be managed as part of a designated utility corridor.	20,630 (87%)	Under the Proposed Plan Alternative, the decision area would be managed as a ROW exclusion area except for 1,022 acres along Highways 50 and 141 that would be managed as ROW avoidance areas.
ROW Exclusion	8,863 (37%)			3,194 (13%)	
Ponderosa Pine					

Priority Vegetation	Acres by Alternative (%) <sup>1</sup>				
	Alt A	Alt B <sup>2</sup>	Alt C <sup>2</sup>	Alt D	Proposed Plan Alternative <sup>2</sup>
ROW Avoidance	0	Under Alternative B the entire decision area would be managed as a ROW exclusion area.	Under Alternative C, the decision area would be managed as a ROW exclusion area except for 926 acres that would be managed as part of a designated utility corridor.	14 (93%)	Under the Proposed Plan Alternative, the decision area would be managed as a ROW exclusion area except for 1,022 acres along Highways 50 and 141 that would be managed as ROW avoidance areas.
ROW Exclusion	555 (72%)			51 (7%)	
Mountain Shrublands					
ROW Avoidance	500 (9%)	Under Alternative B the entire decision area would be managed as a ROW exclusion area.	Under Alternative C, the decision area would be managed as a ROW exclusion area except for 926 acres that would be managed as part of a designated utility corridor.	5,430 (99%)	Under the Proposed Plan Alternative, the decision area would be managed as a ROW exclusion area except for 1,022 acres along Highways 50 and 141 that would be managed as ROW avoidance areas.
ROW Exclusion	1,398 (26%)			51 (1%)	
Riparian					
ROW Avoidance	41 (1%)	Under Alternative B the entire decision area would be managed as a ROW exclusion area.	Under Alternative C, the decision area would be managed as a ROW exclusion area except for 926 acres that would be managed as part of a designated utility corridor.	1,453 (44%)	Under the Proposed Plan Alternative, the decision area would be managed as a ROW exclusion area except for 1,022 acres along Highways 50 and 141 that would be managed as ROW avoidance areas.
ROW Exclusion	733 (22%)			1,782 (54%)	
Source: BLM 2012i					

<sup>1</sup>Percentage of total acreage for that priority vegetation type within the decision area.

<sup>2</sup>These acreages account for less than 1 percent of the decision area, so acres of priority vegetation communities managed as ROW avoidance and exclusion areas were not calculated for these alternatives.

Under Alternative B, the D-E NCA would be designated a ROW exclusion area, with limited exceptions, and no utility corridor would be managed. All priority vegetation would be protected from ROWs under this alternative.

Impacts from lands and realty management under Alternative C would be similar to those under Alternative B, although Alternative C would allow more exceptions for ROW development. This could allow for increased impacts on priority vegetation due to vegetation and soil removal, disturbance, and weed invasion and spread associated with ROW development. Only one utility corridor would be managed, causing fewer related impacts than under Alternative A.

Under Alternative D, 98,408 acres would be managed as a ROW exclusion area, and the rest of the D-E NCA (111,202 acres) would be managed as a ROW avoidance area. This could allow for increased impacts on priority vegetation due to vegetation and soil removal, disturbance, and weed invasion and spread associated with ROW development.

Impacts from lands and realty management under the Proposed Plan Alternative would be similar to those under Alternative C, although with slightly **more** protections for priority vegetation **because of the removal of the utility corridor**.

### ***Impacts from Management of Areas of Critical Environmental Concern***

Human uses, such as recreation and development, are generally limited in ACECs, which would protect priority vegetation from surface-disturbing activities and weed invasion and spread, and fragmentation. However, vegetation management activities could be constrained when they are not intended to target the species of interest for which the ACEC was designated. As a result, certain priority vegetation desired conditions, such as improved age class distribution or plant species composition, may be difficult to achieve in some areas.

By limiting surface-disturbing activities, ACECs would help to retain existing plant functional group composition in desert shrub/saltbush, pinyon-juniper, and sagebrush shrubland communities, and age class structure in pinyon-juniper and sagebrush shrublands. In addition, restrictions would reduce the likelihood of weed invasion and spread in desert shrub/saltbush, pinyon-juniper woodlands, sagebrush shrublands, and seeps and springs, as well as along tributary creeks to the Gunnison River in riparian areas.

Other impacts include:

- Pinyon juniper: retention of existing BLM sensitive plant communities;
- Sagebrush shrublands: retention of Gunnison sage-grouse winter habitat condition and reduction in fragmentation;
- Ponderosa pine: retention of the existing number and size of stands;
- Riparian: retention of vegetation structural diversity and stream functionality;
- Seeps and springs: retention of rare plant populations and reduction in trampling and human disturbance; and
- Hydrology and aquatic systems: retention of the hydrologic regime along tributary creeks to the Gunnison River and cold-water species' habitat quality in aquatic systems.

However, limitations on vegetation management could prevent movement toward desired trends for those same indicators.

Impacts from ACEC management on priority vegetation for each alternative are presented in Table 4.15, Priority Vegetation Communities Managed within an ACEC by Alternative, below.

**Table 4.15. Priority Vegetation Communities Managed within an ACEC by Alternative**

Priority Vegetation	Acres by Alternative (%; See Note Below)				
	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alternative
<b>Desert Shrub/Saltbush</b>	179 (<1%)	0	4,629 (10%)	11,276 (24%)	2,947 (6%)
<b>Pinyon-Juniper Woodlands</b>	1,886 (2%)	0	6,661 (5%)	15,980 (12%)	4,710 (4%)
<b>Sagebrush Shrublands</b>	104 (<1%)	0	57 (<1%)	371 (2%)	368 (2%)
<b>Ponderosa Pine</b>	0	0	519 (68%)	0	0
<b>Mountain Shrublands</b>	0	0	11 (<1%)	0	0
<b>Riparian</b>	126 (4%)	0	433 (13%)	1,633 (50%)	470 (14%)
<i>Note: Percentage indicates percentage of total acreage for that priority vegetation type within the decision area.</i>					
<i>Source: BLM 2012i</i>					

Two ACECs would be managed on 1,900 acres under Alternative A and the Escalante Canyon ACEC (1,895 acres) would protect the greatest acreage of pinyon-juniper woodland and the greatest proportion of riparian vegetation compared with these vegetation communities outside of ACECs.

No areas would be protected by an ACEC designation under Alternative B and there would be no protection from ACEC management. Impacts would likely be similar to those described for Alternative A.

Under Alternative C, the BLM would manage three ACECs on 12,823 acres. ACECs would protect the greatest acreage of pinyon-juniper and desert shrub/saltbush, and would protect the greatest proportion of ponderosa pine compared with these vegetation communities outside of ACECs. Important protections would result from managing livestock active movement and prohibiting surface-disturbing activities within the Escalante Canyon (2,281 acres) and River Rims (4,916 acres) ACECs.

Under Alternative D, the BLM would manage four ACECs on 29,663 acres. ACECs would protect the greatest acreage of pinyon-juniper woodland and desert shrub/saltbush, and would protect the greatest proportion of riparian habitat compared with these vegetation communities outside of ACECs. In addition, the BLM would manage livestock active movement to protect unique and sensitive biological resources within the Escalante Canyon and Gunnison River ACECs (28,518 acres). The BLM would prohibit surface-disturbing activities in the Gunnison Gravels and Gunnison River ACECs (17,331 acres) and a portion of the Gibbler Mountain ACEC (within 200 meters of BLM sensitive plant occurrences) and would apply SSR restrictions within the Escalante Canyon ACEC (11,202 acres).

Under the Proposed Plan Alternative, the BLM would manage four ACECs on 9,011 acres. ACECs would protect the greatest acreage of pinyon-juniper woodland and desert shrub/saltbush, and would protect the greatest proportion of riparian habitat compared with these vegetation communities outside of ACECs. Impacts would be similar to those described for Alternative D but over a smaller area. Also, a smaller radius of protections for sensitive plants would be applied in the Gibbler Mountain ACEC than under Alternative D; surface-disturbing activities would be



prohibited within 100 meters of BLM sensitive plant occurrences. Therefore, more disturbance and associated impacts on priority and vegetation indicators would be allowed under the Proposed Plan Alternative than under Alternative D.

### ***Impacts from Management of National Trails***

The Old Spanish National Historic Trail runs through desert shrub/saltbush vegetation. Actions taken to restore the Old Spanish NHT to a more natural, historical setting would provide for beneficial impacts on this vegetation type.

Under Alternative A, there would not be any specific management prescriptions for the trail. There would be no impacts from management of the Old Spanish NHT under this alternative.

Under all action alternatives, the Hunting Ground would be managed as the Trail Management Corridor (23,131 acres). The BLM would take management actions under all of these alternatives to restore the naturalness of the area to provide opportunities for retracement and interpretation. In the trail corridor, managing the trail specifically to enhance historical research and public use and enjoyment would help instill a sense of stewardship of the landscape in connecting with the past, which could also result in beneficial impacts on the desert shrub/saltbush vegetation type. Under Alternative D, management according to VRM Class I objectives would result in beneficial impacts on desert shrub/saltbush vegetation communities, as described under Impacts from Management of Scenic Values.

### ***Impacts from Management of Wild and Scenic Rivers***

Management of WSR segments found eligible or suitable for inclusion in the NWSRS would protect the free-flowing condition of the segments, maintain the ORVs for which the segment was found eligible, and would prohibit actions within 0.25-mile of the WSR that would modify the setting or level of development such that the tentative classification would change. Such protections would reduce the likelihood for changes to aquatic conditions, weed introduction and spread, and vegetation trampling. However, management of eligible or suitable WSR segments could also potentially restrict vegetation treatments, thus limiting maintenance or improvement of riparian or adjacent vegetation communities.

By restricting certain activities, WSR management would retain the existing vegetation structural diversity, wetland obligate plant species, and saline grasslands in nearby riparian areas; wetland obligate plant species and rare plants in nearby seeps and springs; and hydrologic regime, aquatic species' habitat connectivity, and cold-water aquatic species' habitat quality in affected aquatic systems.

Under Alternative A, 10 WSR study segments would be managed as eligible for inclusion in the NWSRS. The Cottonwood Creek segment (3,729 acres) identifies vegetation as an ORV, with an exemplary occurrence of narrowleaf cottonwood/skunkbush sumac riparian woodland, resulting in impacts as described above.

Under Alternative B, three WSRs would be managed as suitable for inclusion in the NWSRS. The Cottonwood Creek segment (3,729 acres) has vegetation as an ORV, as described for Alternative A.

Under Alternative C, 10 WSRs would be managed as suitable for inclusion in the NWSRS. Impacts would be as described for Alternative A.

There would be no management or protection for WSRs under Alternative D. As a result, there would be no associated protection for priority vegetation, particularly aquatic and riparian communities.

Under the Proposed Plan Alternative, the Cottonwood Creek segment (3,729 acres) would be managed as suitable for inclusion in the NWSRS and has vegetation as an ORV, with impacts as described for Alternative A.

### ***Impacts from Management of Wilderness Study Areas***

Impacts from WSAs would be similar to those described for Wilderness. Under all alternatives, the Dominguez Canyon WSA would be managed on 2,885 acres.

If the WSA were released by Congress, it would be managed for consistency with management of adjacent lands outside the Dominguez Canyon Wilderness under Alternatives A, C, D, and the Proposed Plan Alternative. This would still provide the protection and restrictions afforded by the D-E NCA designation, but it could allow for impacts from recreation and surface-disturbing activities, as no special management or protection would be provided to priority vegetation in that area.

If the WSA were released by Congress under Alternative B, the BLM would preserve any inventoried wilderness characteristics. This would provide protection for priority vegetation, depending on the management that is implemented.

### ***Impacts from Management of Watchable Wildlife Areas***

Management of watchable wildlife areas could impact priority vegetation by allowing for more human disturbance of the sites and attracting more attention to certain species over the long term. Direct impacts include trampling or destruction of vegetation. This could result in reduced plant vigor or productivity.

No watchable wildlife areas would be managed under Alternatives A, B, and C.

Under Alternatives D and the Proposed Plan Alternative, portions of the Escalante Canyon area would be managed as a watchable wildlife area, and wildlife habitat improvements would improve priority vegetation in this area. Pinyon-juniper woodlands are the most common vegetative community within the watchable wildlife area, although riparian areas would have the greatest proportion of their total acreage affected.

## **Summary of Impacts from Alternatives**

Under Alternative A, the current trends in priority vegetation would continue due to the lack of comprehensive planning for all biological resources. In general, vegetation would be managed in accordance with regulations and policy. The greatest adverse impacts on vegetation would likely occur from recreation and areas open to grazing and motorized vehicle use, as these would affect the largest acreage within the decision area. Overall, pinyon-juniper woodlands would be most affected by these management programs, since it has the greatest acreage within the decision area. However, when considering the proportion of vegetation communities that would be affected, sagebrush shrubland and desert shrub/saltbush communities would likely sustain the greatest impacts from BLM management. The greatest protections from adverse impacts for vegetation would occur from management for ACECs and the Dominguez Canyon Wilderness.

Pinyon-juniper and riparian communities would receive the greatest protections from these management designations.

Use of the process described in Appendix A as a systematic approach for resource management under Alternative B would improve management for priority vegetation. Adverse impacts from resource uses would be reduced, as the BLM would implement the most stringent restrictions on surface-disturbing activities (e.g., restrictions on livestock grazing in desert shrub communities). However, lack of active management under Alternative B would prevent the beneficial impacts of movement toward desired trends for many indicators that would require vegetation or weed treatments to improve. As a result, many current trends in priority habitat and vegetation communities would likely continue. The greatest adverse impacts on vegetation would likely occur from use of unplanned ignitions, recreation management, in areas open to grazing, and along routes open to motorized vehicle use, as these would affect the largest acreage within the planning area. Overall, pinyon-juniper woodlands would be most affected by these management programs, since it has the greatest acreage within the decision area. However, when considering the proportion of vegetation communities that would be affected, sagebrush shrubland and mountain shrubland communities would likely sustain the greatest impacts from proposed BLM management. The greatest protections from adverse impacts for vegetation would occur from management for wilderness and biological resources, as well as prohibitions on surface-disturbing activities on 106,796 acres. Pinyon-juniper, ponderosa pine, and riparian vegetation would receive the greatest protections from these management programs.

Under Alternative C, the BLM would focus on resource protection, similarly to under Alternative B, but would add beneficial impacts from an emphasis on active management of resources. It would have the most ambitious priority habitat objectives and would have the greatest beneficial impact of all alternatives in improving vegetation conditions and priority habitat ratings. The greatest adverse impacts on vegetation would occur as a result of recreation management, in areas open to grazing, and along routes open to motorized vehicle use, as these would affect the largest acreage within the planning area. Overall, pinyon-juniper woodlands would be most affected by these management programs, since it has the greatest acreage within the decision area. However, when considering the proportion of vegetation communities that would be affected, sagebrush shrubland and mountain shrubland vegetation communities would likely sustain the greatest impacts from BLM management. The greatest protections from adverse impacts for vegetation would occur from management for wilderness, ACECs, and biological resources, as well as prohibitions on surface-disturbing activities on 86,010 acres. Pinyon-juniper, desert shrub/saltbush, ponderosa pine, and riparian vegetation would receive the greatest protections from these management programs.

Alternative D would have a similar management strategy as Alternative C, using restrictions on surface-disturbing activities and active management to improve vegetation conditions, although at a slower rate and lower objective rating (e.g., “good” vs. “very good”) than under Alternative C. However, there would be an increased focus on providing recreation opportunities. As a result, there would likely be beneficial impacts from improvement of priority habitat indicators, although at a slower rate than under Alternative C. The management programs causing the greatest adverse impacts on vegetation would likely be similar to those described for Alternative C. Overall, pinyon-juniper woodlands would be most affected by these management programs, since it has the greatest acreage within the decision area. However, when considering the proportion of vegetation communities that would be affected, desert shrub/saltbush and sagebrush shrubland communities would likely sustain the greatest impacts from BLM management. The management programs affording the greatest protections for vegetation would be similar to those described for

Alternative C. Pinyon-juniper, desert shrub/saltbush, and riparian vegetation would receive the greatest protections from these management programs.

Management under the Proposed Plan Alternative would have fewer restrictions and less aggressive priority vegetation objectives than under Alternative C but more than under Alternative D. Recreation would be a focus, but not as much as under Alternative D. As a result, adverse and beneficial impacts on priority vegetation would fall somewhere between the two alternatives (Alternatives C and D). The management programs causing the greatest adverse impacts on vegetation would likely be similar to those described for Alternative C. Overall, pinyon-juniper woodlands would be most affected by these management programs, since it has the greatest acreage within the decision area. However, when considering the proportion of vegetation communities that would be affected, sagebrush shrubland and mountain shrubland communities would likely sustain the greatest impacts from BLM management. The management programs affording the greatest protections from adverse impacts for vegetation would be similar to those described for Alternative C. Pinyon-juniper, desert shrub/saltbush, and riparian vegetation would receive the greatest protections from these management programs.

## Cumulative Impacts

The CIAA used to analyze cumulative impacts on vegetation extends outside the planning area, following fourth-order watershed boundaries that completely or partially overlap the planning area. The fourth-order watersheds were used as the basic unit of analysis, because the scope of cumulative influence would be at the watershed scale and is not expected to extend beyond this scale. Noxious and invasive weeds can also be dispersed into the planning area by upstream waterways and carried downstream from the planning area.

Past, present, and reasonably foreseeable future actions and conditions within the CIAA, both on public and private land, that have affected and will likely continue to affect vegetation include mineral exploration and development, forestry, grazing, recreation, road construction, ROWs, weed invasion and spread, prescribed fires and wildfires, land planning efforts, vegetation treatments, habitat improvement projects, insects and disease, and drought. Many of these activities create conditions that cause or favor other vegetation changes. For example, wildfires cause vegetation removal, which makes affected areas more susceptible to weed invasion and soil erosion. Drought conditions reduce vegetation health, which makes vegetation prone to insect infestation or disease. In general, resource use activities have cumulatively caused vegetation removal, fragmentation, weed spread, soil compaction, and erosion, whereas land planning efforts and vegetation and weed treatments have countered these effects by improving vegetation connectivity, productivity, diversity, and health.

Climate change within the CIAA could cause an increase or decrease in temperatures and precipitation, which would affect soil conditions, vegetation distribution, water flows, water quality, and water temperature (Ficklin et al. 2010; Lenihan, Draypek, Bachelet, and Neilson 2003; McKenney et al. 2007; Hamann and Wang 2006; Eaton and Scheller 1996). Such changes would alter the conditions to which vegetation communities are adapted, potentially creating conditions that could favor certain species or communities, weeds, or pests (Hellmann, Byers, Bierwagen, and Dukes 2007).

Under the alternatives, impacts on vegetation would be minimized to the extent practical and feasible through restrictions on uses and activities. Vegetation conditions would be improved through treatments, weed prevention and control, vegetation improvements, use of prescribed

fires and wildfires, and proper grazing practices. In general, all alternatives would work toward achieving land health but would differ in the time and methods used to reach that goal. Current trends would likely continue under Alternatives A due to the lack of comprehensive planning. As a result, impacts on priority vegetation communities would continue, and Alternative A could contribute to cumulative impacts on priority vegetation. While Alternative B would impose many use restrictions to protect priority vegetation, any improvements would likely be in the long-term due to the hands-off management approach. Alternatives C, D, and the Proposed Plan Alternative would likely make more progress toward improving land health and achieving priority habitat objectives but would differ in the time and methods used to reach these goals. Conditions under Alternative C would likely improve the most over the life of the plan, while conditions under Alternative D would likely improve relevant to Alternative A, although less than Alternative B due fewer use restrictions. Finally, conditions under the Proposed Plan Alternative would likely improve more than Alternative B but not as much as under Alternative C. Consequently, the incremental contribution of Alternatives B, C, D, and the Proposed Plan Alternative to cumulative impacts on priority vegetation is expected to be less than significant.

#### **4.3.2.2. Special Status Species and Natural Communities**

This section discusses impacts on special status species, including federally listed species, BLM sensitive species, and State-listed species, from proposed management actions of other resources and resource uses. Impacts on desert bighorn sheep (BLM Sensitive) and Colorado hookless cactus (Federally protected), two BLM-identified priority species, are also described in this section. Existing conditions concerning special status species are described in section 3.2.2.2, Special Status Species and Natural Communities.

### **Methods of Analysis**

Although data on known locations within the planning area are available, the data are neither complete nor comprehensive concerning all special status species or potential habitat that might exist. Known and potential special status species locations were considered in the analysis; however, the potential presence of species outside of these areas was also considered, and as a result, some impacts are discussed in more general terms.

#### ***Indicators***

Indicators of adverse impacts on special status species include the following:

- Likelihood for impacts on priority vegetation, as described in section 4.3.2.1, Priority Species and Vegetation, causing loss of habitat function or value.
- Likelihood of injury or mortality to special status species.
- Decreased population viability or increased contribution to the need for a Federal listing of any Federal candidate species or BLM sensitive species.
- Likelihood of habitat avoidance due to human presence or habitat alteration.
- Likelihood of interfering with a special status species movement pattern that decreases the ability of a species to breed or overwinter successfully to a degree that would lead to substantial population declines.

- Likelihood of impacts on survival or reproduction to special status terrestrial species due to indirect effects of disruptive activities, such as increased duration or frequency of disruptive activities during key time periods when species' fitness is affected. For example, increased motorized traffic in Gunnison sage-grouse winter habitat can increase animal stress, cause more animal movement to avoid disruptive activities, and could require higher energy demands resulting in decreased survival and reproduction.
- Likelihood for potential disease transmission and all age class die-off of bighorn sheep through overlap of domestic sheep and goats with bighorn sheep.
- Likelihood for reductions in the size of known Colorado hookless cactus populations.

### ***Assumptions***

The analysis includes the following assumptions:

- In general, special status species would be more sensitive to habitat fragmentation, development, or changes in habitat conditions, as populations are often already highly fragmented, require specific microhabitats, and are especially sensitive to disturbance and human presence.
- The analysis is largely qualitative due to the lack of data or the uncertainty in existing data on certain special status species' occurrences (for example, many of the BLM sensitive plant species). Furthermore, since many special status species may potentially use habitats that are currently unoccupied and populations fluctuate, any quantitative analysis of occupied habitat would change over time as knowledge of species occurrences increases. Where appropriate, acreages from Chapter 2 are included to show a comparison between alternatives.
- Impacts on special status species would be more significant than impacts on common species, because population viability is already uncertain for special status species and certain species, such as special status plants, tend to be poor competitors.
- Short-term effects are defined as those that would occur over a time frame of two years or less, and long-term effects would occur over longer than two years.
- When bighorn and domestic sheep are present in the same space, risk of association between the species is high; as distance increases away from bighorn sheep mapped range (suitable habitat), the risk of association decreases (see Appendix C). Increased risk of association leads to increased likelihood of disease transmission from domestic sheep to bighorn sheep. Increased likelihood of disease transmission subsequently leads to increased likelihood of all-age bighorn sheep die-offs followed by long-term reductions in lamb survival and recruitment that result in stagnant or declining bighorn sheep populations (George, Kahn, Miller, and Watkins 2009).
- Calculations for Colorado hookless cactus are based on known occurrences surrounded by a 200-meter (656-foot) buffer. Impacts could occur on undiscovered populations under all alternatives.
- The health of special status species is tied to the health of the priority vegetation on which they depend and thus impacts on priority vegetation would affect special status species (see section 4.3.2.1, Priority **Species** and Vegetation). Special status species nested under each priority vegetation type are presented in Table 4.16, Special Status Species Nested Under Priority Vegetation.

Because special status species have specific habitat requirements and often thrive in a particular microhabitat, disturbance to the species or their habitat could result in population declines, which could affect survivability of local populations. Specific habitat requirements, population trends in the planning area, and factors affecting population trends in the planning area are detailed in section 3.2.2.2, Special Status Species and Natural Communities. Relevant recovery plans or conservation strategies, and the biological assessment prepared for this RMP under ESA Section 7 requirements, are also described in Chapter 3.

Implementing management actions for the following resources would have negligible or no impact on special status species and are therefore not discussed in detail: Geological and Paleontological Resources, air resources, and national trails.

## **Direct and Indirect Impacts**

All special status species are nested under at least one priority vegetation type listed in section 4.3.2.1, Priority Species and Vegetation, even if not explicitly stated in that section (see Table 4.16, Special Status Species Nested under Priority Vegetation). Thus, management for (and impacts on) priority vegetation have a direct link to management of special status species. Impacts on priority vegetation can be found in section 4.3.2.1, Priority Species and Vegetation. As such, there will be a limited description of impacts on special status species habitat within this section. Instead, this section focuses on the indicators listed above.

### ***Impacts from Management of Priority Species and Vegetation***

Impacts on special status species' habitats could cause behavioral changes and physiological effects on special status species over the short and long terms. Examples include habitat avoidance; displacement and subsequent increased competition for resources; increased stress; reduced food availability leading to reduced vigor, increased susceptibility to illness or predation, or reduced reproductive success; loss of pollinators leading to reduced reproductive success; reduced nutrient availability leading to reduced photosynthesis in special status plants; and injury or mortality caused by natural events such as fires or floods. Vegetation impacts from surface-disturbing activities, fire, livestock grazing, routes, and recreation would have impacts on waterways as described in section 4.3.2.1, Priority Species and Vegetation, which would impact sediment-intolerant species such as cutthroat trout and BLM sensitive amphibians more than sediment tolerant species, such as Colorado pikeminnow, razorback sucker, and bonytail. Actions causing water depletions could affect humpback chub, which do not occur in the D-E NCA but occur downstream. Specific impacts related to special status species are shown below.

**Table 4.16. Special Status Species Nested Under Priority Vegetation**

Species Name	Desert Shrub/ Saltbush	Pinyon-Juniper Woodlands	Sagebrush Shrublands	Ponderosa Pine Woodlands	Mountain Shrub	Riparian	Seeps and Springs	Hydrology and Aquatic Systems
<b>Federally Listed Species</b>								
Colorado Hookless Cactus <sup>1</sup>	X	X						
Black-Footed Ferret <sup>2,4</sup>	X							
Colorado Pikeminnow <sup>2</sup>						X		X
Razorback Sucker <sup>2</sup>						X		X
Bonytail <sup>2</sup>						X		X
Humpback Chub <sup>2</sup>						X		X
Green Lineage Cutthroat Trout <sup>1</sup>						X		X
Gunnison Sage-Grouse (Proposed as Endangered) <sup>3</sup>			X		X			
Western Yellow-Billed Cuckoo (Proposed as Threatened) <sup>3</sup>						X		
<b>Bald and Golden Eagle Act Species</b>								
Bald Eagle <sup>3,5</sup>						X		
Golden Eagle <sup>3</sup>	X	X	X					
<b>BLM Sensitive Species</b>								
Northern Leopard Frog						X		X
Canyon Tree Frog						X		X
Long-Nosed Leopard Lizard	X	X						
Milk Snake	X	X		X				
Midget Faded Rattlesnake	X	X						
Roundtail Chub						X		X
Bluehead Sucker						X		X
Flannelmouth Sucker						X		X
Cutthroat Trout						X		X
Brewer's Sparrow <sup>3</sup>			X					
Burrowing Owl <sup>3</sup>	X							
Ferruginous Hawk <sup>3</sup>	X							
Northern Goshawk		X		X				
White-Faced Ibis						X		
American White Pelican						X		
Black Swift						X		
Desert Bighorn Sheep	X	X						



Species Name	Desert Shrub/ Saltbush	Pinyon-Juniper Woodlands	Sagebrush Shrublands	Ponderosa Pine Woodlands	Mountain Shrub	Riparian	Seeps and Springs	Hydrology and Aquatic Systems
White-Tailed Prairie Dog	X							
Spotted Bat		X		X		X		
Townsend's Big-Eared Bat		X		X		X		
Fringed Myotis		X		X		X		
Big Free-Tailed Bat						X		
Montrose Bladderpod	X	X						
Colorado Desert Parsley	X							
Grand Junction Milkvetch		X	X					
Naturita Milkvetch		X						
Eastwood's Monkey-flower						X	X	
Game species								
Mule Deer	X	X	X		X			
Pronghorn Antelope	X							
Elk		X	X		X			
<sup>1</sup> Federal threatened species  <sup>2</sup> Federal endangered species  <sup>3</sup> Also a USFWS bird of conservation concern  <sup>4</sup> Considered extirpated from the decision area  <sup>5</sup> Also a BLM sensitive species								

In general, management for priority vegetation would strive to improve habitat conditions. It would accomplish this through such actions as restoration, plantings and seeding, removal of undesired vegetation, and restrictions on surface-disturbing and disruptive activities in certain locations. Over the short-term, management actions such as vegetation treatments could disturb special status wildlife species, causing habitat avoidance of certain areas. Over the long term, these same actions would improve habitats and provide more opportunities for nesting, roosting, cover, and forage for wildlife. Similarly, these treatments would cause short-term disturbance of potential special status plant habitat. They would accomplish this through vegetation removal and soil exposure. Over the long term they would improve habitats for special status plants by removing competitor species and restoring native species. Restrictions in certain areas would protect known and unknown special status plants. They would do this by removing sources of surface-disturbing and disruptive activities that could lead to removal, trampling, or other disturbance to special status plants.

Management under Alternative A would continue to lack a comprehensive, landscape-level approach. Impacts would be similar to those described in section 4.3.2.1, Priority Species and Vegetation. Known special status species populations would be protected; impacts would be more likely to occur on previously undiscovered special status species populations. Current trends would continue.

Lack of specific management for sagebrush shrublands under Alternative A and development within this habitat could lead to impacts on Gunnison sage-grouse including increased risk of injury or mortality, decreased population viability and increased contribution to the need to list, habitat avoidance, interference with species movement, and impacts on survival or reproduction.

Under Alternative A, some riparian areas would be protected from surface-disturbing activities, although there would be no specific management for hydrology or aquatic systems. Riparian protections would reduce impacts on habitats as described above, which would affect riparian-dependent special status species as well as special status fish species.

Under Alternative B, the BLM would emphasize using natural processes and restrictions on allowable uses to conserve and protect D-E NCA resources. Such restrictions would reduce direct disturbances to special status fish, wildlife, and plants, and would reduce the likelihood for injury or mortality, reduced population viability and increased contribution to the need to list, habitat avoidance, interference with movement patterns, and effects on survival or reproduction. This is particularly true for special status plants, as these species are particularly sensitive to surface-disturbing activities. However, restrictions on habitat improvements could slow or even prevent improvement in habitats for fish and wildlife.

Restrictions under Alternative B would retain existing sagebrush habitat for Gunnison sage-grouse and would prevent disturbances to Gunnison sage-grouse and other sagebrush-dependent special status species that would cause an increased likelihood for injury or mortality; decreased population viability and increased contribution to the need to list; habitat avoidance; interference with species movement; and impacts on survival or reproduction. However, limitations on habitat improvements could slow or prevent improvements in sagebrush habitat over the long term.

Restrictions under Alternative B would also retain existing riparian habitat and prevent impacts on hydrology or aquatic systems, and would prevent disturbances to riparian-dependent special status species and special status fish species. Impacts from restrictions and limitations on habitat improvements would be similar to those described for Gunnison sage-grouse. In addition,

seasonal prohibitions on in-channel work would protect warm-water special status fish species (i.e., flannelmouth sucker, bluehead sucker, and roundtail chub).

Under Alternative C, the BLM would emphasize restrictions on uses and active management and would have the most ambitious desired future conditions for priority vegetation. As a result, this alternative would have the greatest likelihood for improvement in special status species indicators.

Restrictions under Alternative C would be similar to, although less than, under Alternative B, resulting in fewer protections than those described for Gunnison sage-grouse and sagebrush-dependent species. However, active habitat management would facilitate improvements in sagebrush habitats, which could improve population viability, survival, and reproduction for Gunnison sage-grouse and sagebrush-dependent species.

Impacts on special status fish and riparian-dependent species would be similar to those described for Gunnison sage-grouse and sagebrush-dependent species. In addition, improved riparian conditions could increase aquatic habitat quality, which could increase special status fish population viability, survival (Skog and Nicholson 2000), and reproduction.

The BLM would encourage active management for biological resources under Alternative D, although with less ambitious desired future conditions than under Alternative C. Impacts on most special status species, including Gunnison sage-grouse, sagebrush- and riparian-dependent species, and special status fish, would be similar to but fewer than under Alternative C.

Impacts under the Proposed Plan Alternative would be similar to those described for Alternative D, although the Proposed Plan Alternative would include more ambitious desired future conditions for biological resources and more protections for priority vegetation, resulting in improved habitat for special status species, including Gunnison sage-grouse, sagebrush- and riparian-dependent species, and special status fish.

### ***Impacts from Management of Special Status Species and Natural Communities and Non-Special Status Fish and Wildlife***

Protective measures would be implemented under all alternatives and would vary by alternative. Under all alternatives however, prohibitions on disruptive and surface-disturbing activities, including within 0.5 mile of active special status raptor nest sites during the breeding season, would reduce the likelihood for injury or mortality, reduced population viability and increased contribution to the need to list, habitat avoidance, and changes to survival or reproduction caused by nest abandonment for special status species in these areas.

No areas would be identified for a prohibition on surface-disturbing activities under Alternative A and thus impacts on habitats and species would continue. Impacts would be more likely to occur on undiscovered populations. All action alternatives, however, identify areas where surface-disturbing activities would be prohibited, reducing the likelihood of injury or mortality, decreased population viability and increased contribution to the need to list, habitat avoidance, interference with species movement patterns, and impacts on survival or reproduction.

Under all action alternatives, depending on the habitats affected (see section 4.3.2.1, Priority Species and Vegetation), prohibitions on surface-disturbing activities would likely reduce impacts as described above on Colorado hookless cactus, bighorn sheep, and numerous BLM sensitive species that use the affected habitats (Table 4.16, Special Status Species Nested Under Priority Vegetation).

Alternative B would have the greatest acreage where surface-disturbing activities would be prohibited, and thus would provide the most protection to special status species and their habitats. Special status species and habitats that would be directly protected under Alternative B include: special status raptors; bald eagle winter concentration areas, kit fox, BLM sensitive bats, BLM sensitive reptiles, white-tailed prairie dog, and Gunnison sage-grouse. Incidental protections would be provided to those special status species that share habitat with the directly protected special status species. Such restrictions would reduce the likelihood of injury or mortality, reduced population viability, habitat avoidance, changes to species movement patterns, and impacts on survival or reproduction on those special status species that occur in the areas where these restrictions are implemented.

Impacts from prohibition of surface-disturbing activities under Alternative C, D, and the Proposed Plan Alternative would be similar to, but fewer than, those described for Alternative B, due to the reduced acreage that would be protected under these alternatives. In addition to those species that would be protected under Alternative B, special status species that would be directly protected under Alternative C include: bald eagle, golden eagle, ferruginous hawk, peregrine falcon, prairie falcon, and northern goshawk. Species that would be directly protected under Alternatives D and the Proposed Plan Alternative would be the same as those listed for Alternative B, except the BLM would not protect bald eagle winter concentration areas.

Acres of special status species habitat, bighorn sheep habitat, and Colorado hookless cactus habitat where surface-disturbing activities would be prohibited under each alternative are presented in Table 4.17, Special Status Species Habitat Where Surface-Disturbing Activities Would be Prohibited by Alternative, and Table 4.18, Priority Species Habitat Where Surface Disturbance Would Be Prohibited by Alternative, respectively. Under Alternatives B and C, the BLM would prohibit surface-disturbing activities on the greatest percentage of white-tailed prairie dog overall range. Alternatives B, C and D would protect similar percentages of raptor nest buffers and eagle winter concentration areas, while the Proposed Plan Alternative would protect a smaller percentage of these habitats. Alternatives B and C would protect a greater percentage of Gunnison sage-grouse habitat, whereas Alternatives D and the Proposed Plan Alternative would protect a smaller percentage of this habitat. A 200-meter SSR stipulation would be applied to all known and future recorded locations for hookless cactus in the NCA. Additional protections for these species would also apply, as described in this section.

**Table 4.17. Special Status Species Habitat Where Surface-Disturbing Activities Would Be Prohibited by Alternative**

Species (Total Range)	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alternative
<b>White-Tailed Prairie Dog Overall Range (12,671 Total Acres)</b>	--	6,383 (50%)	5,148 (40%)	1,296 (10%)	2,212 (19%)
<b>Raptor Nest Buffers and Eagle Winter Concentration Areas (10,097 Total Acres)</b>	--	8,050 (61%)	7,109 (54%)	7,756 (59%)	4,535 (35%)
<b>Gunnison Sage-Grouse Habitat (17,847 Total Acres)</b>	--	4,270 (24%)	3,157 (18%)	1,510 (8%)	1,370 (8%)

Source: BLM 2012i

**Table 4.18. Priority Species Habitat Where Surface Disturbance Would Be Prohibited by Alternative**

Species (Total Range)	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alternative
<b>Bighorn Range (96,042 Total Acres)</b>	----	56,284 (59%)	44,486 (46%)	39,014 (41%)	29,034 (30%)
<b>Bighorn Production Areas (25,954 Total Acres)</b>	----	16,505 (64%)	11,340 (44%)	10,791 (42%)	8,638 (33%)
<b>Colorado Hookless Cactus (10,569 Total Acres)</b>	----	10,419 (98%)	6,630 (63%)	6,210 (59%)	4,113 (39%)
<i>Source: BLM 2012i</i>					

All action alternatives would prohibit surface-disturbing activities on some extent of priority species habitat. Under Alternative B, the BLM would prohibit surface-disturbing activities on the greatest percentage of bighorn range, bighorn production areas, and Colorado hookless cactus range. Alternative C, the BLM would prohibit surface-disturbing activities on the second-greatest percentage of bighorn range, bighorn production area, and Colorado hookless cactus range, followed by Alternative D. The Proposed Plan Alternative would provide the fewest protections to priority species habitat of the action alternatives.

The BLM would implement seasonal restrictions on construction, vehicle access, and work hours within 30,980 acres of bighorn sheep range under Alternative A. This would reduce the likelihood of disturbance to bighorn sheep. However, these restrictions would not change the likelihood for disease transmission to bighorn sheep by domestic species (currently under a “poor” rating).

Alternative A would not require domestic non-working dogs to be on leash within bighorn sheep range, as defined by the Colorado Division of Parks and Wildlife, which would result in continued potential for conflicts with bighorn sheep.

Under Alternative A, the BLM would require USFWS-approved mitigation measures for grazing, and would limit livestock use of Lower Escalante Canyon to active movement only to protect Colorado hookless cactus. Current trends would continue, and the “fair” rating for Colorado hookless cactus populations would likely remain as such.

Under Alternative B, the BLM would discontinue current and deny proposed domestic sheep or goat grazing or active movement permits and permit renewals within the D-E NCA, which would nearly eliminate the likelihood of disease transmission between domestic animals and wild bighorn sheep. The BLM would also implement other restrictions on recreation within bighorn crucial breeding habitat and bighorn production areas, which would reduce the likelihood of impacts on survival or reproduction caused by disturbance to bighorn sheep and habitat during times of the year when the species is most sensitive to disturbance.

The BLM would implement a number of protections and restrictions for Colorado hookless cactus under Alternative B including restrictions on permitted and surface-disturbing activities, route closures, and closure of areas to livestock use. Such actions would reduce the likelihood for reductions in the size of known Colorado hookless cactus populations and would improve the currently “fair” rating to a limited extent.

Alternative B would require domestic non-working dogs to be on leash within bighorn sheep range, as defined by the Colorado Division of Parks and Wildlife, which would reduce conflicts with bighorn sheep.

Under Alternative C, the BLM would exclude domestic goat, but permit domestic sheep grazing or active movement, in suitable and occupied bighorn sheep habitat, on an allotment-by-allotment basis using a risk of association assessment (See Appendix C) and associated management prescriptions. This would reduce the likelihood of disease transmission from domestic animals, although to a lesser extent than Alternative B. Other restrictions would be similar to, although less stringent than, Alternative B. In addition, the BLM would rehabilitate closed motorized and mechanized routes in crucial breeding habitat, which would reduce habitat fragmentation and increase the amount of habitat for bighorn sheep. This could improve movement for the species across the landscape.

Alternative C would only seasonally require domestic non-working dogs to be on leash within bighorn sheep range, as defined by the Colorado Division of Parks and Wildlife, which would only reduce conflicts with bighorn sheep from December 1 to May 1.

Under Alternative C, the BLM would implement similar protections and restrictions for Colorado hookless cactus to those under Alternative B, but to a lesser extent. However, Alternative C would reduce noxious and invasive weed spread in occupied habitat through intensively managed permitted activities and treatments. As a result, there would be a lower likelihood for reductions in the size of Colorado hookless cactus populations. The rating would potentially improve to “good” or “very good” as a result of this alternative.

Impacts on bighorn sheep under Alternative D would be similar to those under Alternative A, as the BLM would implement fewer measures to reduce the risk of association between domestic sheep and desert bighorn sheep than under Alternatives B and C. This could allow for disease transmission to bighorn sheep in certain instances. Impacts from route closure and prohibition of new routes would be the same as under Alternative B.

Alternative D would not require domestic non-working dogs to be on leash within bighorn sheep range, as defined by the Colorado Division of Parks and Wildlife, which would result in continued potential for conflicts with bighorn sheep.

Under Alternative D, the BLM would implement similar protections and restrictions for Colorado hookless cactus to those under Alternative C, but to a lesser extent. Impacts from noxious and invasive weed treatment would be the same as those described for Alternative C. As a result, there would be a lower likelihood for reductions in the size of Colorado hookless cactus populations. The rating would potentially improve to “good” as a result of this alternative.

Impacts on bighorn sheep under the Proposed Plan Alternative would be similar to those under Alternative D. However, the BLM would reduce impacts further by requiring more restrictions in domestic sheep allotments. Restrictions include a shorter period of use in “high risk” allotments. In addition, if monitoring indicates that mitigation measures are not effective at preventing association between domestic/wild sheep in an area of an allotment, then the BLM would consider additional actions to reduce or eliminate risk. Route closures would be similar to those under Alternative C, with additional restrictions on construction in bighorn sheep production areas.

The Proposed Plan Alternative would only require domestic non-working dogs to be on leash within Wilderness Zone 1, which is an area of high recreation visitation within bighorn sheep production and winter concentration range. In all other areas within bighorn sheep range, domestic non-working dogs must be on leash or under voice control. Voice control could mitigate some potential adverse impacts of non-working dogs on bighorn sheep; however, this requirement is difficult to enforce and often results in minimal protection for bighorn sheep. These mitigative

measures under the Proposed Plan Alternative would provide greater protection against conflicts between dogs and bighorn sheep than Alternatives A or D, but less so than under Alternatives B and C.

Impacts on Colorado hookless cactus under the Proposed Plan Alternative would be similar to those described for **Alternative D**.

### ***Impacts from Management of Noxious and Invasive Weeds***

Impacts on special status species, including desert bighorn sheep (a priority special status species), caused by noxious and/or invasive weeds under each alternative would be similar to those described in section 4.3.2.1, Priority Species and Vegetation; and section 4.3.2.4, Noxious and Invasive Weeds.

Weeds, including cheatgrass and halogeton, alter the ecological characteristics of Colorado hookless cactus habitat and are often able to outcompete native species under drought conditions. In some locations, downward trend of the cactus can be attributed to cheatgrass invasion (USFWS 2010).

However, weed treatments could increase the likelihood for injury or mortality of Colorado hookless cactus by, for example, crushing from vehicles, herbicide runoff, drift, or spills, or browsing and trampling caused by domestic animals used for biological control.

The BLM would implement relevant standard operating procedures and mitigation measures presented in the Final Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States PEIS (BLM 2007b) to ensure that impacts on Colorado hookless cactus from weed treatments are reduced. With proper implementation, weed treatment methods under Alternatives A, C, D, and the Proposed Plan Alternative would eliminate or reduce noxious and invasive weeds and thus reduce competition with Colorado hookless cactus. Weed treatments would be restricted under Alternative B, and thus elimination or reduction of noxious and invasive weeds would be limited under this alternative.

### ***Impacts from Management of Fire and Fuels***

Depending on the extent, location, severity, and seral type affected, unplanned ignitions would have short-term impacts on special status species by removing or degrading habitat for some species, injuring or killing slow moving species, causing habitat avoidance and changes in species movement patterns, or reducing population viability and increasing the contribution to the need to list a species. Unplanned ignitions could destroy known and undiscovered special status plant populations, including Colorado hookless cactus, depending on the location and severity of the fire. In certain circumstances, the special status plant seed bank could be destroyed through denaturing or lost by erosion.

Under all alternatives, fire suppression could and likely would occur at some level during the life of the plan. Water used to suppress fires would in all likelihood come from within the Colorado River basin, and as such, would result in water depletions. Given that implementation of the RMP would result in the depletion of water from within the Colorado River basin, this plan falls under BLM Colorado's 2008 programmatic biological assessment for water depleting activities (excluding fluid minerals development) on BLM lands in the Colorado River basin in Colorado.

In response to BLM's programmatic biological assessment, the USFWS issued a programmatic biological opinion (ES/GJ-6-CO-08-F-0010) on February 25, 2009, which concurred with the

BLM's determination that water depletions are "Likely to Adversely Affect" the Colorado pikeminnow, humpback chub, bonytail, and razorback sucker. Likewise, water depletions are also likely to adversely affect designated critical habitats for these endangered fish along the Colorado and Gunnison Rivers. Reduced flows within the Gunnison and Colorado rivers can affect these endangered fish by reducing the usability of important spawning habitat located within what is known as the 15 Mile Reach of the Colorado River in Grand Junction. In addition, reduced flows allow the accumulation of fine sediments and constrict the river channel which reduces habitat complexity and diversity. The creation and maintenance of important microhabitats such as backwaters, side channels, and flooded bottomlands, is impaired with reduced flows. The USFWS also determined that BLM water depletions from within the Colorado River basin are not likely to jeopardize the continued existence of the Colorado pikeminnow, humpback chub, bonytail, or razorback sucker, and that BLM water depletions are not likely to destroy or adversely modify designated critical habitat.

A recovery implementation program for endangered fish species in the Upper Colorado River Basin was initiated in January 1988. The recovery program serves as the reasonable and prudent alternative to avoid jeopardy and aid in recovery efforts for these endangered fishes resulting from water depletions from the Colorado River basin. The programmatic biological opinion addresses internal and external BLM projects including impoundments, diversions, water wells, pipelines, and spring developments. The USFWS determined that projects that fit under the umbrella of the programmatic biological opinion would avoid the likelihood of jeopardy and/or adverse modification of critical habitat for depletion impacts to the Upper Colorado River basin if they deplete relatively small amounts of water (less than 100 acre-feet) and BLM makes a one-time contribution to the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin in the amount equal to the average annual acre-feet depleted by each project. The programmatic biological opinion instructed BLM to make an annual payment to the National Fish and Wildlife Foundation to cover all BLM authorized actions that result in water depletions.

Increased human activity and noise associated with wildfire management and prescribed fire could increase the likelihood for injury or mortality to special status species, habitat avoidance, or changes to survival or reproduction caused by changes to nesting, breeding, foraging, or roosting behavior. However these impacts would be short duration, limited in scope, and mitigations would apply to minimize impacts on fish and wildlife. A large fire that would require extensive suppression operations, such as extensive staging areas and fire-line construction, could result in long-term effects on species and their habitats. However, smaller fires that would require less extensive suppression operations would generally avoid these long-term effects. Unplanned fires for multiple objectives (including resource benefit) would be allowed to burn to support priority habitat and vegetation objectives and would have less fire-management-related human impact on the landscape when compared to full suppression fires.

Under all alternatives, impacts from allowing natural, unplanned ignitions to burn would be as described in section 4.3.2.1, Priority Species and Vegetation. Under Alternative A, the BLM emphasizes full suppression on the portion of the decision area previously managed by the GJFO. In this area, impacts on special status species from fire as described above would be minimized. However, full suppression could allow for a large-scale catastrophic fire over the long term in vegetation communities where fuels accumulate, increasing the likelihood of impacts on special status aquatic and terrestrial wildlife species from fire as described above.

Restrictions under Alternative B would reduce the BLM's flexibility and efficiency in managing unplanned fires since only minimal manipulation of fire and fuels would be allowed and the BLM



would prohibit vegetation treatments. This would cause the greatest impacts on special status species, as described above. However, by allowing nearly all unplanned fires to burn, the BLM would reduce the likelihood of a large-scale catastrophic fire, and therefore reduce the likelihood of impacts from fire as described above.

Alternatives C, D, and the Proposed Plan Alternative would emphasize a suite of fuel treatments and would provide the most management flexibility of any of the alternatives, resulting in increased protection for special status aquatic and terrestrial wildlife species from fire.

### ***Impacts from Management of Soils and Water Quality***

Impacts on special status species habitat from soil and water quality management under each alternative would be similar to those described in section 4.3.2.1, Priority Species and Vegetation.

Under Alternative A, some actions would be implemented to protect soils and maintain or improve water quality, which would protect special status fish habitats from alteration. These measures would reduce the likelihood for decreased population viability or increased contribution to the need to list, habitat avoidance, interference with species movement, and impacts on survival or reproduction associated with habitat degradation.

Alternative B includes more protections for soils and water quality, thereby providing more protections than Alternative A. As a result, the likelihood of impacts described under Alternative A would be reduced further under Alternative B.

Alternative C includes more protection measures for soils than Alternative B. Impacts would be similar to, but greater than, those described for Alternative B. Water resource protections under Alternative C would be similar to but fewer than under Alternative B, although the BLM would implement more measures to actively improve water quality under Alternative C. As a result, the likelihood of impacts described under Alternatives A and B would be further reduced under Alternative C.

Protections for soils and water and their resulting impacts under Alternatives D and the Proposed Plan Alternative would be similar to but fewer than under Alternative C.

### ***Impacts from Management of Wilderness***

Under all alternatives, the BLM would not permit any actions that would impair the overall wilderness character of the Dominguez Canyon Wilderness (66,280 acres), which would reduce the likelihood of impacts associated with human disturbance or changes in habitat, including injury or mortality, reduced population viability and increased contribution to the need to list, habitat avoidance, interference with movement patterns, and effects on survival or reproduction. However, impacts could occur where wilderness management prevents active weed management, vegetation improvement, or post-fire rehabilitation, particularly under Alternative B, which would impose the greatest restrictions on activities within wilderness. Alternatives A, C, D, and the Proposed Plan Alternative would allow some disturbances in wilderness, such as authorizing new developments, vegetation treatments, and fewer restrictions on recreation. Protecting and restoring naturalness via active management, although limited in the Proposed Plan Alternative to situations in which indicators are ranked “poor” or fair,” would increase the likelihood of both positive and negative impacts to special status species habitat described above.

Bighorn sheep winter and summer range, production areas, and winter concentration areas exist within the Wilderness and would be affected by proximity to livestock in this area. Colorado

hookless cactus also occurs, but it would be largely protected from population-level impacts by BLM maintenance of wilderness values.

### ***Impacts from Management of Scenic Values***

Under all alternatives, areas managed as VRM Class I and II would limit the amount of surface-disturbing activities allowed as described in section 4.3.2.1, Priority Species and Vegetation. Impacts from limitations on surface-disturbing activities would be as described under Impacts from Management of Special Status Species and Natural Communities, above. The greatest impacts from limitations on surface-disturbing activities associated with VRM management under Alternative A would be on those special status species that use pinyon-juniper and desert shrub/saltbush habitats, including Colorado hookless cactus, bighorn sheep, and numerous BLM sensitive species (Table 4.16, Special Status Species Nested under Priority Species and Vegetation). Under all action alternatives, all lands within the D-E NCA would be managed as VRM Class I or II, thus limiting impacts on all special status species within the decision area.

Acres of special status species habitat, bighorn sheep habitat, and Colorado hookless cactus habitat managed as VRM Class I and II for Alternative A are presented in Table 4.19, Special Status Species and Priority Species Habitat Managed as VRM Class I and II, Alternative A. Other special status species would be impacted in the same manner. All of the action alternatives would have a substantially increased amount of acreage protected by VRM Class I and II for the special status and priority species. While the distribution of acres as either VRM Class I or II would vary by alternative, the total acreage protected would be the same across all action alternatives. Other special status species would be impacted in the same manner.

**Table 4.19. Special Status Species and Priority Species Habitat Managed as VRM Class I and II, Alternative A**

Special Status Species	Acres	Priority Species	Acres
White-Tailed Prairie Dog Overall Range (12,671 Total Acres)	22	Bighorn Range (96,042 total acres)	62,735
Raptor Nest Buffers and Eagle Winter Concentration Areas (10,097 Total Acres)	7,090	Bighorn Production Areas (25,954 Total Acres)	9,153
Gunnison Sage-Grouse Habitat (17,847 Total Acres)	741	Colorado Hookless Cactus (10,569 Total Acres)	4,836
<i>Source: BLM 2012i</i>			

### ***Impacts from Management of Recreation***

The nature and type of impacts on special status species habitat from recreation would be similar to those described in section 4.3.2.1, Priority Species and Vegetation. In addition, recreation also causes impacts on other indicators than vegetation and habitat. These include habitat avoidance, interference of movement, and increased likelihood of injury/mortality due to the presence of human recreation activities. Levels of impact are related to the duration, intensity, and expanse of recreational activities.

Impacts from recreation, particularly in areas managed for trail-based recreation, could include increased likelihood for injury or mortality, habitat degradation or removal (see section 4.3.2.1, Priority Species and Vegetation), habitat avoidance or displacement (Knight and Cole 1995) and subsequent changes in species movement patterns, and impacts on survival or reproduction (Gutzwiller et al. 1998). Noise caused by humans can have a variety of behavioral and

physiological effects on wildlife, including increased heart rate, changes in metabolism and hormone balance, increased energy expenditure, reduced food intake, habitat avoidance and abandonment, and reduced reproductive success (Knight and Cole 1995; Radle 2007). Human disturbance near raptor nests can result in the abandonment of the nest, high nestling mortality from overheating, chilling, or dehydration when young are left unattended if adults are flushed from the nest, premature fledging, and reduced access to resources (Gutzwiller et al. 1998).

Damage to aquatic resources from recreation could alter aquatic wildlife movement patterns. Use of trails to access fishing along streams or lakes could result in soil compaction, could exacerbate erosion and sedimentation into waterways, and could reduce vegetative cover. Furthermore, since riparian areas and waterways are popular recreation spots, increased demand for access to these areas is expected as the population increases, causing greater impacts on aquatic species. Some species may adapt to disturbances over time and could recolonize disturbed habitats. Impacts are more likely to occur in easily accessible areas, where visitation would be high and concentrated.

In addition, aquatic nuisance species and diseases can be transmitted throughout aquatic systems and threaten native species and ecological processes (ANSTF 2012). Mechanisms for spreading aquatic nuisance species can result from recreation, including hunting, fishing, and boating (USFWS 2014a). In Colorado, several aquatic nuisance species are present or have the potential to invade aquatic habitats; these are the zebra mussel (*Dreissena polymorpha*), quagga mussel (*D. bugensis*), New Zealand mudsnail (*Potamopyrgus antipodarum*), Eurasian watermilfoil (*Myriophyllum spicatum*), water hyacinth (*Eichhornia crassipes*), hydrilla (*Hydrilla verticillata*), and giant salvinia (*Salvinia molesta*). To date, zebra mussel, New Zealand mudsnail, and Eurasian watermilfoil have been identified in Colorado (CPW 2010b). Whirling disease is caused by the water-born parasite *Myxobolus cerebralis* and is present in Colorado. The disease affects trout populations and can be transmitted through fishing and boating (CPW 2012). Providing educational opportunities for preventing aquatic nuisance species transmission, coupled with inspections and enforcement, is an important step in reducing the spread of nuisance species.

Management of an SRMA, and to a lesser extent ERMAs, would aim to draw users to certain areas for certain recreational uses, and rules and guidelines would limit or control activities through specialized management tools such as designated campsites, permits, area closures, and limitations on numbers of users and duration and types of uses. Such limitations would reduce the source of human-caused impacts, including species avoidance of populated areas, as well as trampling, harassment, and poaching. Impacts would vary depending on the SRMA, as each SRMA would be managed for certain recreation outcomes and setting prescriptions. In addition, by imposing more controls over uses in SRMAs, impacts from prohibited or limited activities, such as off-highway vehicle use, could be displaced to other areas, resulting in increased impacts outside of the SRMA. Similar displacement of impacts could occur from management of ERMAs, where there is a higher potential for conflicts to develop between non-compatible recreation activities (section 4.4.1, Recreational Use). Over time, this could result in the displacement of visitors and increased impacts on special status species outside of managed recreation areas.

Recreation activities that result in greater amounts of human-caused noise would have a greater disruptive impact on wildlife (Knight and Cole 1995). Of particular concern within the D-E NCA, as a BLM sensitive species and a species commonly associated with the D-E NCA by the visiting public, are desert bighorn sheep. Within the D-E NCA, these activities include concentrated OHV use and recreational target shooting. Lead shot ingestion is also the primary source of elevated lead exposure and poisoning in waterfowl and most other bird species. Lead contamination associated with concentrated recreational target shooting can lead to elevated lead exposure and

poisoning of these species (Scheuhammer and Norris 1996; Thomas 1997; Kendall et al. 2009). Lead bioaccumulates in higher trophic levels of an ecosystem, which puts raptor species such as bald and golden eagles at risk of lead poisoning as a result of eating prey that have been exposed to lead left behind from recreational target shooting (Scheuhammer and Norris 1996; Thomas 1997; Kendall et al. 2009).

Acres managed as RMAs are presented in section 4.3.2.1, Priority Species and Vegetation. Under Alternative A, the BLM would not manage recreation through the identification of SRMAs and ERMAs and permit applications would be assessed on a case-by-case basis. By not managing for SRMAs or ERMAs, recreation would be more dispersed. Given expected increased recreation use, this would lead to difficulty in monitoring impacts on biological resources. Increased recreation use in the absence of RMA management could also lead to recreation conflict and subsequent damage to biological resources, as visitor expectations for quality recreation are not met. As a result, the likelihood for impacts caused by recreation would increase throughout the D-E NCA under Alternative A. As such, management would continue to be insufficient to accommodate current and future levels of recreation, which could lead to an increase in impacts on special status species as population and recreation use increase. Impacts could include an increase in the likelihood for injury or mortality, reduced population viability, habitat avoidance, interference with special status species movement patterns, and impacts on survival or reproduction.

Nearly the entire D-E NCA would be open to recreational target shooting under Alternative A (note that restrictions on recreational target shooting do not apply to hunting). Special status species, including desert bighorn sheep, may avoid habitats in response to recreational target shooting activity. Impacts from lead exposure, as described above, would also occur under this alternative. For desert bighorn sheep, the closures proposed under Alternative A would prevent target shooting-related disruptive impacts on 0 acres of this species' winter and summer concentration and production areas within the D-E NCA. Threats to special status aquatic species from the transmission of aquatic nuisance species under Alternative A would continue and potentially increase with an increase in new recreation projects should they occur near aquatic systems.

Alternatives B and C, with their emphasis on restrictions and biological resource protection, would include more restrictions on recreation within the D-E NCA, and thus would provide more protection for special status species and their habitats. ERMA management under Alternative B would be geared to dispersed, multiple-use recreation. This management approach would lead to similar impacts as described under Alternative A, although to a lesser extent. The entire D-E NCA would be closed to recreational target shooting under Alternative B, thus eliminating the impacts from this use that are described above for Alternative A. For desert bighorn sheep, the closure proposed under Alternative B would prevent target shooting-related disruptive impacts on 32,244 acres (100 percent) of this species' winter and summer concentration and production areas within the D-E NCA. Restricting recreation opportunities, particularly near waterways, would reduce the threat of aquatic nuisance species and disease transmission impacts on special status aquatic species under Alternatives B and C.

Under Alternative C, the BLM would only manage SRMAs, which would aim to draw users to areas with specific recreation outcomes. However, the types of outcomes and settings that would be managed for in these SRMAs would be consistent with improved biological conditions. Therefore, impacts within these SRMAs would be minimal or lead to progress toward desired future conditions. Recreation management under Alternative C could displace non-targeted dispersed recreation outside of managed recreation areas, with subsequent impacts in those areas

similar to those described under Alternative A. In addition, the BLM would close 104,999 acres (approximately 50 percent of the D-E NCA) to recreational target shooting. This would reduce the area impacted by target shooting as described for Alternative A; however these closures may concentrate this activity in other areas (approximately 50 percent of the D-E NCA), with additional resulting impacts on special status wildlife species from disruption and lead exposure in those areas. For desert bighorn sheep, the closures proposed under Alternative C would prevent target shooting-related disruptive impacts on 75 percent (24,194 acres) of this species' winter and summer concentration and production areas within the D-E NCA.

Under Alternative D, the BLM would manage much of the D-E NCA as SRMAs. SRMA management, particularly in trail-based recreation SRMAs in Cactus Park, Ninemile Hill and Sawmill Mesa, would lead to increased and concentrated use in these areas, causing impacts on special status species such as an increased likelihood for injury or mortality, habitat avoidance or displacement, changes in species movement patterns, and impacts on survival or reproduction. Non-trail-based recreation SRMAs in Gunnison River, Gunnison Slopes, Cottonwood Canyon and Escalante Canyon would have fewer impacts on special status species. Of the trail-based SRMAs designated under this alternative, those that focus on OHV use (Cactus Park and Ninemile Hill) would result in greater impacts because of the noise associated with OHV use. The BLM would close 156,942 acres (approximately 75 percent of the D-E NCA) to recreational target shooting. This would reduce the area impacted by target shooting as described for Alternative A; however these closures may concentrate this activity in other areas (approximately 25 percent of the D-E NCA), with additional resulting impacts on special status wildlife species from disruption and lead exposure in those areas. For desert bighorn sheep, the closures proposed under Alternative D would prevent target shooting-related disruptive impacts on 98 percent (31,572 acres) of this species' winter and summer concentration and production areas within the D-E NCA. Fewer restrictions on recreation would result from actions proposed under Alternative D; therefore, aquatic nuisance species and disease would likely continue to threaten special status aquatic wildlife species.

Under the Proposed Plan Alternative, more of the D-E NCA would be managed as either an SRMA or ERMA than under any of the other alternatives, except for Alternative D, which would provide a variety of recreation experiences and options. Impacts from trail-based recreation in the Cactus Park SRMA would be the same as described above for Alternative D, although there would be no new motorized route construction allowed in bighorn sheep production areas, providing less new disturbance and greater protection to the bighorn sheep. The BLM would close 9,995 acres (approximately 5 percent of the D-E NCA) to recreational target shooting. This would not substantially reduce the target shooting impacts from disruption and lead exposure as described for Alternative A. It is unlikely that the proposed closures under the Proposed Plan Alternative would concentrate this activity in other areas of the D-E NCA. For desert bighorn sheep, these closures would prevent target shooting-related impacts on 10 percent (3,256 acres) of this species' winter and summer concentration and production areas within the D-E NCA. Similarly to under Alternative D, fewer restrictions on recreation would be imposed; therefore, aquatic nuisance species and disease would likely continue to threaten special status aquatic wildlife species.

Acres of special status species habitat, bighorn sheep habitat, and Colorado hookless cactus habitat that would exist within RMAs under each alternative are presented in Table 4.20, Special Status Species Habitat Managed as Recreation Management Areas by Alternative, and Table 4.21, Priority Species Habitat Managed as Recreation Management Areas by Alternative, respectively. For white-tailed prairie dog, 93 percent and 99 percent of overall range could be affected by surface-disturbing activities, human presence, and noise associated with recreation within ERMAs

and SRMAs under Alternatives B and D, respectively. There would be no impacts on this species from RMAs under Alternative C. For raptor nest buffers and eagle winter concentration areas, 40 percent of the total acreage would be impacted by ERMAs under Alternative B, with 14 percent and 55 percent impacted by SRMAs under Alternatives C and D, respectively. For Gunnison sage-grouse, over 95 percent of proposed critical habitat (potential) would be impacted by ERMAs and SRMAs under Alternatives B and C, respectively. Under Alternative D, 85 percent of Gunnison sage-grouse habitat would be impacted by SRMAs. Impacts from the Proposed Plan Alternative would be similar to those for Alternative D but spread across SRMAs and ERMAs for raptor nest buffers and eagle winter concentration areas.

**Table 4.20. Special Status Species Habitat Managed as Recreation Management Areas by Alternative**

Recreation Allocation	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alternative
<b>White-Tailed Prairie Dog Overall Range (12,671 Acres)</b>					
SRMA	--	0	190	12,609	190
ERMA	--	12,521	0	0	12,330
<b>Raptor Nest Buffers and Eagle Winter Concentration Areas (10,097 Acres)</b>					
SRMA	--	0	3,705	7,389	4,613
ERMA	--	7,054	0	642	3,166
<b>Gunnison Sage-Grouse Proposed Critical Habitat (Potential) (17,847 Acres)</b>					
SRMA	--	0	17,086	15,214	15,212
ERMA	--	17,087	0	0	0

Source: BLM 2012i

**Table 4.21. Priority Species Habitat Managed as Recreation Management Areas by Alternative**

Recreation Allocation	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alternative
<b>Bighorn Range (96,042 Acres)</b>					
SRMA	--	0	12,141	43,386	9,764
ERMA	--	40,714	0	7,616	37,449
<b>Bighorn Production Areas (25,954 Acres)</b>					
SRMA	--	0	3,990	9,669	1,105
ERMA	--	4,443	0	0	8,581
<b>Colorado Hookless Cactus Occurrences (10,569 Acres)</b>					
SRMA	--	0	1,316	6,829	1,883
ERMA	--	6,767	0	52	5,097

Source: BLM 2012i

All action alternatives would have priority species habitat designated as either an ERMA or an SRMA. Under Alternative B, 38 percent of bighorn range, 1 percent of bighorn production areas, and 50 percent of Colorado hookless cactus would be within an ERMA. Under Alternative C, 11 percent of bighorn range, 1 percent of bighorn production areas, and no Colorado hookless cactus would be within an SRMA. Under Alternative D, 17 percent of bighorn range, 10 percent of bighorn production areas, and no Colorado hookless cactus would be within an SRMA. Under the Proposed Plan Alternative, 49 percent of bighorn range, 37 percent of bighorn production areas, and 59 percent of Colorado hookless cactus would be either within an SRMA or ERMA.

### ***Impacts from Management of Scientific Use***

Science management actions would encourage research on natural, wildlife, riparian, and water resources, which could indirectly improve management for special status species by promoting actions that maintain and increase suitable habitat, cover, and forage for special status fish and wildlife, and decreasing the likelihood of impacts on the indicators described above.

Science management under Alternative A would continue basic trend and baseline monitoring that informs management decisions; this could improve management of special status species and help target areas and species that are most vulnerable to impacts on indicators.

Under Alternative B, science management would be similar to that under Alternative A but would encourage research that addresses special status species. Impacts would be similar to but greater than those under Alternative A.

Impacts from science management under Alternatives C, D and the Proposed Plan Alternative would be similar to but greater than under Alternative B, because there would be more focus on research to inform management decisions.

### ***Impacts from Management of Educational Use***

Additional management actions to emphasize education under Alternatives C, D, and the Proposed Plan Alternative may cause increased appreciation of special status species and their habitats. These impacts would not occur under Alternatives A and B, because there would be less emphasis on education programs for the public.

### ***Impacts from Management of Livestock Grazing***

Livestock grazing that is managed to achieve Land Health Standards would not compromise achievement of special status species objectives. However, even under proper management, livestock grazing could cause impacts on special status species to varying degrees. Impacts from poorly managed livestock grazing would be greater in magnitude and extent than those from properly managed grazing.

Livestock grazing could have impacts on special status plants, including federally threatened Colorado hookless cactus, by inadvertent trampling, causing injury or mortality to special status plants. Impacts would go undetected if grazed areas had not been previously inventoried for special status plant species. Restrictions on grazing in certain areas would reduce or remove these impacts.

Livestock grazing has the potential for the greatest impact on desert bighorn sheep populations in the planning area due to disease risk and population declines within their core habitats. For example, when domestic and wild sheep or goats have opportunities to intermingle, because of the proximity of domestic livestock to wild populations of sheep, and when population trends indicate that disease may be a factor in a population, the potential for disease transmission increases. There are only four populations of desert bighorn sheep in Colorado; their uncertain population status is in part due to disease and poor reproduction. Therefore, alternatives where more acres of desert bighorn sheep habitat are closed to grazing would be unequivocally more protective of desert bighorn sheep.

Livestock often use riparian areas for water and shade, which may cause greater impacts on these areas by concentrating livestock use. Livestock could cause impacts by altering stream

functionality and vegetation structural diversity. The loss or reduction of streamside vegetation can lead to a decrease in available aquatic cover, an increase in water temperatures, and a reduction in the availability of insects to feed fish and other aquatic wildlife. Livestock could spread invasive species on the Gunnison River and tributary creeks, thus increasing the fire fuel load on the Gunnison River.

Range improvements, including the construction of stock ponds, could promote vegetation loss, soil compaction, and erosion in the areas around the ponds. The source would be livestock congregating around these areas that were previously less intensively grazed. However, depending on the placement of stock ponds, the development of livestock water sources may draw livestock away from existing natural water features and sensitive riparian habitat that have vulnerable soils and that livestock now use as a water source.

Livestock near aquatic systems could change cold-water aquatic habitat quality through nutrient inputs from manure (Larsen et al. 1994). Grazing near aquatic systems may increase sediment loads in waters containing sediment-intolerant fish species, such as native cutthroat trout. In addition, livestock grazing could change aquatic habitat connectivity when it is allowed next to or within aquatic systems. This would come about by altering bank stabilization and water quality and thus altering habitat conditions in certain areas. The construction of livestock ponds under all alternatives except alternative B would result in water depletions. Given that implementation of the RMP would result in the depletion of water from within the Colorado River basin, this plan falls under BLM Colorado's Programmatic Biological Assessment for water depleting activities (excluding fluid minerals development) on BLM lands in the Colorado River basin in Colorado (BLM 2008d). The implications of the biological assessment are discussed under Impacts from Management of Fire and Fuels.

Alternative A would have the second most available AUMs, and the third largest acreage available for grazing. Because of the habitats affected (see section 4.3.2.1, Priority Species and Vegetation), livestock grazing management under Alternative A would likely have the greatest impacts on Colorado hookless cactus, bighorn sheep, Gunnison sage-grouse, and numerous BLM sensitive species that utilize pinyon-juniper woodlands, sagebrush shrublands, and mountain shrubland communities (Table 4.16, Special Status Species Nested under Priority Species Habitat and Vegetation).

The potential for grazing to impact riparian habitats and aquatic systems would continue under Alternative A. Limiting livestock use to active movement only (see Glossary) on 209 acres of riparian habitat would reduce impacts on riparian-dependent special status species and special status fish species that are described above. Alternative A allows for the construction of stock ponds in the Dominguez Canyon Wilderness. This could impact upland special status species habitat, while reducing impacts on riparian and special status aquatic species habitat, as described above.

Alternative B would have the fewest acres available for grazing, fewest available AUMs, and most acres unavailable for grazing. As a result, impacts on special status species would be similar to, but fewer than, those under Alternative A. Closure of some allotments in Colorado hookless cactus habitat would substantially reduce impacts from grazing on this species in these areas. Livestock grazing management under Alternative B would result in the least amount of priority riparian habitat open to grazing. It would close the greatest amount of riparian habitat to livestock (see Table 4.9, Livestock Grazing Allocations in Priority Vegetation Communities, Alternative B). These actions would provide the most habitat protection for special status fish species and other



aquatic wildlife, compared to all of the alternatives. Limiting livestock use to active movement only on 1,491 acres of riparian habitat would reduce impacts on riparian-dependent special status species and special status fish species that are described above. In areas where livestock grazing prevents achievement of biological resource objectives, the BLM would consider a reduction in AUMs or closure of all or part of the allotment to improve habitats. This would allow habitats to improve, although some communities may not be able to fully recover. No stock ponds would be constructed under Alternative B.

Alternative C would similarly reduce acres available for grazing and available AUMs. However, the BLM would manage more intensively or implement closures only when biological resource objectives are not met. As a result of this reactive management strategy, there could be a delay between impacts occurring and when they are remedied. Under Alternative C, the riparian community would have a greater proportion of its total acreage unavailable for grazing compared to Alternative A, and would therefore experience reduced impacts. The protection of riparian habitat however would not be as extensive as a result of the actions proposed under Alternative B (see Table 4.10, Livestock Grazing Allocations in Priority Vegetation Communities, Alternative C). Impacts on special status species would be similar to, but fewer than, those under Alternative A. Limiting livestock use to active movement only on 1,800 acres of riparian habitat would reduce impacts on riparian-dependent special status species and special status fish species that are described above. In areas where livestock grazing prevents achievement of biological resource objectives, the BLM would first implement management techniques to reduce impacts prior to considering a reduction in AUMs or closure of all or part of the allotment to improve habitats. This type of active management would allow for more options for improving habitat while still allowing for livestock grazing.

Alternative D would include the most acres available for grazing and the most available AUMs. Restrictions and management actions under Alternative D would be similar to those under Alternative C. As such, impacts on most special status species would be similar to those in Alternative C. However, limiting livestock use to active movement only on 525 acres of riparian habitat (see Table 4.11, Livestock Grazing Allocations in Priority Vegetation Communities, Alternative D) would cause greater impacts on riparian-dependent special status species and special status fish species than under Alternative C. Alternative D would provide the least amount of protection for special status aquatic species and their habitat, compared to the other alternatives. In areas where livestock grazing prevents achievement of biological resource objectives, impacts would be the same as described for Alternative C. Alternative D calls for the construction of up to 17 new livestock water ponds. This would have similar impacts on special status species and their habitat as described under Alternative C.

Impacts from grazing management under the Proposed Plan Alternative would be similar to those described for Alternative C. However, limiting livestock use to active movement only on 983 acres of riparian habitat would cause fewer impacts on riparian-dependent special status species and special status fish species than under Alternative C. This is because of increased management and guidance in riparian areas under the Proposed Plan Alternative. The closure of 571 acres of priority riparian habitat to livestock grazing could offset some of the impacts from active movement; therefore, the Proposed Plan Alternative would provide more protection for special status fish species than Alternative A but less than Alternative B. The Proposed Plan Alternative would allow up to 11 stock ponds to be constructed, which would have slightly fewer impacts on special status species than Alternatives C and D. In areas where livestock grazing prevents achievement of biological resource objectives, impacts would be the same as described for Alternative C.

Acres of special status species habitat, bighorn sheep habitat, and Colorado hookless cactus habitat that would be available and unavailable for grazing under each alternative are presented in Table 4.22, Special Status Species Habitat Open and Closed to Grazing, by Alternative, and Table 4.23, Priority Species Habitat Impacted by Livestock Grazing, by Alternative, respectively. Nearly all (97 percent or more) Gunnison sage-grouse habitat would be open to livestock grazing under all alternatives. Under all action alternatives, for most special status species there would be slight reductions in the acres open to livestock grazing, with the exceptions of raptor nest buffers and eagle winter concentration areas under Alternative D and the Proposed Plan Alternative and Gunnison sage-grouse habitat, which has approximately equal acreage for all for alternatives. There would be substantial reductions in acres open to grazing under Alternative B for white-tailed prairie dog overall range and raptor nest buffers and eagle winter concentration areas. Furthermore, for all special status species habitats, Alternative B would have the most acres closed to livestock grazing,

**Table 4.22. Special Status Species Habitat Open and Closed to Grazing, by Alternative**

Grazing Allocation	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alternative
<b>White-Tailed Prairie Dog Overall Range (12,671 Acres)</b>					
Open	12,500	5,885	12,289	12,412	12,387
Open to Active Movement Only	0	25	122	0	0
Closed	0	6,697	195	195	219
Unallotted	108	0	0	0	0
<b>Raptor Nest Buffers and Eagle Winter Concentration Areas (10,097 Acres)</b>					
Open	6,334	4,492	5,994	9,943	7,161
Open to Active Movement Only	774	632	4,101	151	2,841
Closed	0	4,969	0	0	491
Unallotted	2,611	0	0	0	0
<b>Gunnison Sage-Grouse Habitat (17,847 Acres)</b>					
Open	17,437	17,437	17,437	17,592	17,491
Open to Active Movement Only	0	0	251	180	180
Closed	0	251	0	96	17
Unallotted	251	0	0	0	0

Source: BLM 2012i

**Table 4.23. Priority Species Habitat Impacted by Livestock Grazing, by Alternative**

Grazing Allocation	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alternative
<b>Bighorn Range (96,042 Acres)</b>					
Open	85,709	77,592	83,912	92,233	84,707
Open to Active Movement Only	6,914	8,827	12,087	3,803	8,690
Closed	0	9,616	37	0	2,639
Unallotted	3,006	0	0	0	0
<b>Bighorn Production Areas (25,954 Acres)</b>					
Open	22,978	23,224	23,224	25,053	23,461
Open To Active Movement Only	2,561	2,719	2,729	900	2,574
Closed	0	11	0	0	12
Unallotted	10	0	0	0	0

Grazing Allocation	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alternative
<b>Colorado Hookless Cactus Range (10,569 Acres)</b>					
<b>Open</b>	7,915	5,011	7,947	9,442	8,449
<b>Open to Active Movement Only</b>	1,640	1,247	2,482	987	1,762
<b>Closed</b>	0	4,171	0	0	218
<b>Unallotted</b>	580	0	0	0	0
<i>Source: BLM 2012i</i>					

Acres of priority species habitat that is impacted shows a similar pattern as for the special status species in Table 4.22, Special Status Species Habitat Open and Closed to Grazing, by Alternative. Alternative B shows a substantial reduction in open acreage for overall bighorn sheep and Colorado hookless cactus ranges, whereas Alternative C shows more modest reductions in acreage. Within bighorn sheep production areas the acres open to livestock grazing remain relatively similar across Alternatives A, B, and C. Acres open to grazing would increase slightly under Alternative D for all species and for Colorado hookless cactus under the Proposed Plan Alternative.

Livestock grazing has the potential for impacts on bighorn sheep due to disease transmission and subsequent population declines as described under Priority Species and Vegetation.

### ***Impacts from Management of Transportation and Travel***

The nature and type of impacts on special status species habitats from transportation and travel management would be similar to those described in sections 4.3.2.1, Priority Species and Vegetation. In addition, transportation and travel also causes impacts on other indicators than vegetation and habitat. These include habitat avoidance, interference of movement, and increased likelihood of injury/mortality due to presence of human activities along routes. Levels of impact are related to the duration, intensity, and expanse of routes.

Travel routes and motorized travel have been shown to affect terrestrial wildlife, including birds, amphibians, small mammals and big game species (Wisdom et al. 2004; Rowland, Wisdom, Johnson, and Penninger 2004; Trombulak and Frissell 2000; Parris and Schneider 2009; Eigenbrod, Hecnar, and Fahrig 2009; Swihart and Slade 1984). Impacts include increased likelihood for habitat fragmentation, degradation and weed spread, injury or mortality, interference with acoustic signals and noise or visual disturbance leading to habitat avoidance and potentially changes in wildlife movement patterns (Ouren et al. 2007; Parris and Schneider 2008). Impacts include reduced use near highways (Ruediger, Wall, and Wall 2006), increased movement rates and probabilities of flight response (Wisdom et al. 2004), and increased daily movements and home range (Rowland, Wisdom, Johnson, and Penninger 2004). Such increases in movement and stress levels would cause individuals to expend more energy, which could impact reproductive success or susceptibility to mortality, predation, or disease (Ouren et al. 2007).

Where actions or activities include travel routes, there is high risk of sediment impacts on aquatic species. Sediments of less than 1 millimeter can impact spawning habitat and reproductive success for fish species that spawn in gravel substrates; this includes the sediment-intolerant native cutthroat trout. Tiny sediments can fill the interstitial spaces in spawning gravels and reduce the flow of oxygenated water to developing embryos, which decreases survival (Quinn 2005). Although sediments and turbid waters may provide cover from predators for sediment-tolerant species, including razorback sucker (Langstaff 2004; Johnson and Hines 1999), too much sediment could negatively impact spawning success of endangered Colorado River fish.

Roads are the primary point source of sediment loading in many watersheds. Depending on local topography, road density, road condition, proximity to water, and adjacent upland and riparian habitat condition, roads can vary from limited impact to substantial impact to aquatic habitats primary via the addition of fine sediments. Travel routes increase surface runoff and sedimentation, and where they cross water bodies, they often require in-channel structures such as culverts and bridges that remove aquatic habitat and may be barriers to fish passage (Bryant 1981; Barrett, Grossman, and Rosenfeld 1992).

Increased sediment loading is a concern to the listed fishes given the attenuation of Gunnison River flows. Historic flow regimes are largely absent and flows sufficient to move sediment and create and maintain important micro-habitats such as backwaters, flooded bottomlands, and side channels is lacking. With the lack of flow, sediments accumulate and constrict the river and reduce habitat complexity and diversity important to the various life stages of these fish.

Because of the habitats types most affected by the D-E NCA route system (see section 4.3.2.1, Priority Species and Vegetation), travel management under all alternatives would likely have the greatest impacts on Colorado hookless cactus, bighorn sheep, Gunnison sage-grouse, and numerous BLM sensitive species that rely on pinyon-juniper, sagebrush shrubland, and desert shrub/saltbush habitats (Table 4.16, Special Status Species Nested Under Priority Vegetation). Dust associated with routes could affect Colorado hookless cactus by settling on the plants and altering photosynthesis and respiration. Impairment of these functions could increase the likelihood of decreased population viability or contribution to the impacts on survival or reproduction.

All action alternatives would have fewer miles of open routes than Alternative A. The greatest mileage of closed routes would occur under Alternative C, likely resulting in the fewest impacts on both terrestrial and aquatic special status species and their habitat. It should be noted that not rehabilitating (or reclaiming) closed routes can result in sedimentation loading from runoff to streams near the closed routes. These impacts are based on such site-specific conditions as elevation, precipitation, aspect, and surface type, and may not otherwise occur through regular, if periodic, maintenance of the route. Alternatives B, D, and the Proposed Plan Alternative would be relatively similar in terms of their impacts on special status species.

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

The nature and type of impacts on special status species habitats from land tenure and land use authorizations would be similar to those described in sections 4.3.2.1, Priority Species and Vegetation. Additional impacts include habitat avoidance, interference of movement, and increased likelihood of injury/mortality due to presence of human activities.

Permitted, surface-disturbing activities associated with land use authorizations would result in short-term direct impacts through mortality, injury, and habitat avoidance due to noise, increased vehicle traffic, and use of heavy machinery. Habitat avoidance could increase competition for resources in adjacent habitats. Over the long term, these activities would remove and fragment habitats due to road development and use, facility construction and placement, and construction within ROWs. Fragmented habitats would likely support fewer animals and number of species and could impact breeding success (Herkert 1994; Donovan and Flather 2002). Species could avoid developed areas over the long-term, or may adapt and recolonize sites after construction. ROW avoidance and exclusion areas would reduce or eliminate habitat impacts, respectively.

Bird and bat mortality and injury could occur from collision or electrocution with transmission lines and other ROW structures, particularly for large, less maneuverable birds such as waterfowl, although raptors and passerines are also very susceptible (Faanes 1987; Manville 2005). Birds have been observed to change their flight pattern to avoid colliding with power lines (Faanes 1987), which could increase energy expenditure and affect survival or reproduction. ROW development in areas where there are existing ROWs would reduce impacts, since resident birds may have adapted to the existing ROWs. Conditions of approval, such as requiring flight diverters or following Avian Power Line Interaction Committee guidelines (APLIC 1994; APLIC 2006), would be applied to new ROW applications to reduce impacts.

On the basis of the habitats affected (see section 4.3.2.1, Priority Species and Vegetation), ROW exclusion areas under Alternative A would likely prevent impacts on Colorado hookless cactus, bighorn sheep, and numerous BLM sensitive species that use the affected habitats (Table 4.16, Special Status Species Nested Under Priority Vegetation).

Under Alternative B, all habitats would be designated as a ROW exclusion area, with limited exceptions, thus limiting impacts on special status species within the decision area.

Under Alternative C, all habitats would be designated as a ROW exclusion area, although with more exceptions than under Alternative B, and 926 acres would be a designated utility corridor. This could allow for increased impacts on special status species associated with ROW development.

On the basis of the habitats affected (see section 4.3.2.1, Priority Species and Vegetation), ROW exclusion and avoidance areas under Alternative D would likely reduce impacts on Colorado hookless cactus, bighorn sheep, Colorado pikeminnow, razorback sucker, bonytail, humpback chub, and numerous BLM sensitive species compared with Alternative A (Table 4.16, Special Status Species Nested Under Priority Vegetation).

Impacts from lands and realty management under the Proposed Plan Alternative would be similar to those under Alternative C, although 1,022 acres along Highways 50 and 141 would be managed as ROW avoidance areas.

### ***Impacts from Management of Areas of Critical Environmental Concern***

The nature and types of impacts on special status species habitats would be similar to those described in section 4.3.2.1, Priority Species and Vegetation.

Two ACECs (Gunnison Gravels and Escalante Canyon) totaling 1,900 acres would be managed under Alternative A. Escalante Canyon ACEC (1,895 acres) would be managed to protect Colorado hookless cactus and Eastwood's monkey-flower, a BLM sensitive species. On the basis of the habitats protected within ACECs under Alternative A (see section 4.3.2.1, Priority Species and Vegetation), the greatest protections would likely be afforded to bighorn sheep, Colorado pikeminnow, razorback sucker, bonytail, humpback chub, western yellow-billed cuckoo, and numerous BLM sensitive species that rely on the protected habitats (Table 4.16, Special Status Species Nested Under Priority Vegetation).

Under Alternative B, no ACECs would be managed within the D-E NCA and there would be no protection from ACEC management. As a result, the likelihood for disturbance, injury, or mortality to special status species could increase in areas where no additional protection is provided, compared to Alternative A. Impacts would be more likely to occur from unpermitted

uses, such as recreation. This is because activities requiring BLM authorization would likely provide protection for known or potential special status species in a given area.

Under Alternative C, the BLM would manage three ACECs on 12,405 acres. Impacts from managing the Escalante Canyon ACEC would be similar to those described for Alternative A. The exception is that the ACEC would cover a larger area (2,282 acres), would protect large populations of Colorado hookless cactus, and provide a greater level of protection to other sensitive plant populations in the added portion of the ACEC than under Alternative A. The River Rims ACEC (4,496 acres) would be designated to protect large populations of Colorado hookless cactus, which would also protect white-tailed prairie dog colonies, and the Big Dominguez Canyon ACEC (5,627 acres) would protect Colorado hookless cactus, Grand Junction milkvetch, canyon tree frog, desert bighorn sheep, and peregrine falcons. In addition, the BLM would manage livestock active movement to protect unique and sensitive biological resources and would prohibit surface-disturbing activities within the Escalante Canyon and River Rims ACECs (6,778 acres), which would provide additional protections for special status species in these areas. ACEC protections for Colorado hookless cactus could increase population viability and promote recovery for the species.

Under Alternative D, the BLM would manage four ACECs on 29,243 acres. The Escalante Canyon ACEC would be designated on 11,202 acres and would protect Colorado hookless cactus, Grand Junction milkvetch (BLM sensitive), bighorn sheep and two other special status plant species: Eastwood's milkvetch and long-flower cat's-eye. It would provide a greater level of protection to the sensitive plant populations in the added portion of the ACEC than Alternative A but less in the remaining portion because of less stringent surface use restrictions. The Gibbler Mountain ACEC (1,310 acres) would be designated to protect the Grand Junction milkvetch. The Gunnison River ACEC (16,716 acres) would be designated to protect large populations of Colorado hookless cactus, flannelmouth sucker, bluehead sucker, roundtail chub, desert bighorn sheep, bald eagles, peregrine falcons, and critical habitat for Colorado pikeminnow and razorback sucker. In addition, the BLM would manage livestock active use to protect unique and sensitive biological resources, including Colorado hookless cactus, within the Escalante Canyon and Gunnison River ACECs (27,918 acres). The BLM would prohibit surface-disturbing activities in the Gunnison Gravels and Gunnison River ACECs (16,731 acres) and would apply SSR restrictions within the Escalante Canyon ACEC (11,202 acres), which would provide additional protections for wider-roaming special status species in these areas. ACEC protections for Colorado hookless cactus could increase population viability and promote recovery for the species.

Under the Proposed Plan Alternative, the BLM would manage four ACECs on 9,011 acres. Impacts would be similar to those described for Alternative D, except the Escalante Canyon ACEC would provide less protection for special status species. This is because it would apply SSR restrictions instead of prohibiting surface-disturbing activities. Moreover, a smaller buffer (100 meters) would be applied around BLM sensitive plant occurrences in the Gibbler Mountain ACEC. Therefore, there could be more disturbance and associated impacts on special status species and natural communities indicators than under Alternative D.

### ***Impacts from Management of Wild and Scenic Rivers***

WSRs would have the greatest impacts on riparian-dependent and aquatic special status species and habitats that are within 0.25-mile of the WSR by protecting the free-flowing condition of the segments, maintaining the ORVs for which the segment was found eligible, and by prohibiting actions that would modify the setting or level of development such that the tentative classification

would change. Such protections would reduce the likelihood for impacts on the indicators described above.

Under Alternative A, 10 WSRs would be managed as eligible for inclusion in the NWSRS. Eight of these WSRs have special status species as an ORV: Gunnison River Segments 1 and 3: designated critical habitat for endangered Colorado pikeminnow, habitat for flannemouth sucker, bluehead sucker, and roundtail chub, all BLM sensitive; Big Dominguez Creek Segments 1 and 2 and Little Dominguez Creek Segments 1 and 2: BLM sensitive species canyon tree frog breeding pools; Escalante Creek Segment 1: high quality habitat for peregrine falcons, bluehead sucker and flannemouth sucker, all BLM sensitive; and Escalante Creek Segment 2: habitat for peregrine falcons, desert bighorn sheep, river otter, bluehead sucker and flannemouth sucker, all BLM sensitive. Managing to protect the ORVs and free-flowing **condition** of the segments would provide direct protection to these species. In addition, protections for native riparian woodlands, the ORV for Cottonwood Creek, would protect habitat for nearby special status species and improve the potential for developing suitable habitat for western yellow-billed cuckoo.

Under Alternative B, three WSR segments would be managed as suitable for inclusion in the NWSRS. Fish species are an ORV for two of these segments: Gunnison River Segments 1 and 3: designated critical habitat for endangered Colorado pikeminnow, habitat for flannemouth sucker, bluehead sucker, and roundtail chub, all BLM sensitive. Impacts would be the same as Alternative A but over a smaller area.

Under Alternative C, 10 WSRs would be managed as suitable for inclusion in the NWSRS. Impacts would be as described for Alternative A.

There would be no management or protection for WSRs under Alternative D. As a result, there would be no associated protection for aquatic and riparian-dependent species and habitats.

Under the Proposed Plan Alternative, one WSR, the Cottonwood Creek segment, would be managed as suitable for inclusion in the NWSRS. Protections for native riparian woodlands would protect habitat for nearby special status species and improve the potential for developing suitable habitat for western yellow-billed cuckoo.

### ***Impacts from Management of Watchable Wildlife Areas***

Managing watchable wildlife areas could increase visitation in certain areas and increase the focus on certain species, thereby causing more human disturbance in localized areas. However, by designating these areas and increasing public awareness of special status wildlife issues, visitation and consequential disruption of other special status wildlife habitat may be reduced.

There would be no watchable wildlife areas under Alternatives A, B, and C, and thus no impacts as described above.

Under Alternatives D and the Proposed Plan Alternative, portions of the Escalante Canyon area would be managed as a watchable wildlife area, and wildlife habitat improvements would be carried out in this area. This area would also be managed as an ACEC and would thus be afforded additional protections from that designation. On the basis of the habitats within the watchable wildlife area (see section 4.3.2.1, Priority **Species** and Vegetation), the greatest impacts, as described above, are expected on Colorado hookless cactus, bighorn sheep, Colorado pikeminnow, razorback sucker, bonytail, humpback chub, western yellow-billed cuckoo, and

numerous BLM sensitive species that use the affected habitats (Table 4.16, Special Status Species Nested Under Priority Vegetation).

## Summary of Impacts from Alternatives

Impacts from BLM management under each alternative would be directly related to impacts described in section 4.3.2.1, Priority Species and Vegetation, and the magnitude of impacts on special status species would depend on the acreage of habitats that would be affected and the specific locations of proposed activities. In general, the greatest adverse impacts on special status species would occur from Alternative A due to the lack of comprehensive planning. Alternative B would implement many restrictions that are not in Alternatives C, D, or the Proposed Plan Alternative and there would be a lack of active management for resources. However, restrictions on habitat treatments in Alternative B would limit the BLM's control over how quickly improvements and beneficial impacts occur. Alternatives C, D, and the Proposed Plan Alternative would incorporate restrictions on activities disruptive to special status species and their habitats, as well as active management to improve habitats. Ratings would improve under these alternatives, although at different rates. Alternative C would likely provide the greatest beneficial impacts on special status species, followed by the Proposed Plan Alternative and then Alternatives B and D. However, Alternative B would result in the least adverse impact on desert bighorn sheep due to the removal of domestic sheep grazing from the D-E NCA.

## Cumulative Impacts

The CIAAs used to analyze potential impacts on special status fish, wildlife, and plants vary by species, but they would be included in the CIAAs in section 4.3.2.1, Priority Species and Vegetation. The CIAA for Gunnison sage-grouse includes the range of the species.

Cumulative impacts on special status species are related to those described for priority vegetation communities. Past, present, and reasonably foreseeable future actions and conditions within the CIAA that have affected and will likely continue to affect special status species include mineral exploration and development, forestry, grazing, recreation, road construction, water diversion and withdrawals, weed invasion and spread, prescribed fires and wildfires, land planning efforts, vegetation treatments, habitat improvement projects, insects and disease, and drought. Many of these activities change habitat conditions, which then cause or favor other habitat changes. For example, wildfires remove habitat, and affected areas are then more susceptible to weed invasion, soil erosion, and sedimentation of waterways, all of which degrade habitats (conversely, wildfires can also be used to improve habitats). In general, resource use activities have cumulatively caused habitat removal, fragmentation, noise, increased human presence, and weed spread, whereas land planning efforts and vegetation, habitat, and weed treatments have countered these effects by improving habitat connectivity, productivity, diversity, and health.

Climate change could cause an increase or decrease in temperatures and precipitation, which would affect soil conditions, vegetation distribution, water flows, water quality, and water temperature (Ficklin et al. 2010; Lenihan, Draypek, Bachelet, and Neilson 2003; McKenney et al. 2007; Hamann and Wang 2006; Eaton and Scheller 1996). Such changes would alter habitat conditions, potentially creating conditions that could favor certain species or communities, weeds, or pests (Hellmann, Byers, Bierwagen, and Dukes 2007). Because special status species often inhabit very specific microhabitats, small changes could cause large effects.



Under the alternatives, impacts on special status species would be minimized to the extent practical and feasible through compliance with the ESA and BLM Manual 6840 (BLM 2008d), restrictions, stipulations, closures to mineral exploration and development, recreation and motorized travel, conditions of approval, designation of ACECs to protect certain special status species, and by concentrating development in previously disturbed areas. Habitat conditions would be improved through treatments, weed prevention and control, appropriation of water rights, use of prescribed fires and wildfires, forestry management, and grazing management. In general, all alternatives would work toward achieving land health and thus improving special status species habitats but would differ in the time and methods used to reach that goal. Current trends would likely continue under Alternatives A and B due to the lack of comprehensive planning in Alternative A and the lack of active management in Alternative B. As a result, impacts on special status species and their habitats would continue, and these alternatives could significantly contribute to cumulative impacts on special status species. Alternatives C, D, and the Proposed Plan Alternative would likely make more progress toward improving land health and achieving priority habitat objectives but would differ in the time and methods used to reach these goals. Alternative C would combine restrictions on surface-disturbing activities with active habitat restoration and would have the most aggressive priority habitat objectives. Consequently, incremental contribution of Alternatives C, D, and the Proposed Plan Alternative to cumulative impacts on special status species is expected to be less than significant.

#### **4.3.2.3. Non–Special Status Fish and Wildlife**

This section discusses impacts on fish and wildlife from proposed management actions of other resources and resource uses. Habitat types are described in section 3.2.2.1, Priority Species and Vegetation. Existing conditions concerning fish and wildlife and descriptions of habitat requirements for various species are described in section 3.2.2.3, Non–Special Status Fish and Wildlife.

### **Methods of Analysis**

#### ***Indicators***

Indicators of adverse impacts on fish or wildlife include changes to the following:

- Likelihood of habitat degradation or removal through changes to the vegetation communities and habitats upon which the fish and wildlife rely (see section 4.3.2.1, Priority Species and Vegetation).
- Likelihood of injury or mortality to fish and wildlife.
- Likelihood of habitat avoidance due to human presence or habitat alteration.
- Likelihood of interfering with a species movement patterns that decreases the ability of a species to breed or overwinter successfully to a degree that would lead to substantial population declines.
- Likelihood of impacts on survival or reproduction to terrestrial species due to indirect effects of disruptive activities, such as increased duration or frequency of disruptive activities during key time periods where species' fitness is affected. For example, increased motorized traffic in big game crucial winter habitat during winter months can increase animal stress, cause more

animal movement to avoid disruptive activities, and could require higher energy demands resulting in decreased survival and reproduction.

### *Assumptions*

The analysis includes the following assumptions:

- If monitoring reveals that mitigation is unsuccessful in precluding significant impacts, immediate measures to prevent further impacts would be implemented as appropriate to the species affected prior to the accumulation of impacts on a level of significance.
- Disturbance of a key or critical component of a species habitat would be detrimental, with the degree of detriment dependent on the importance of the habitat component to the maintenance of the population.
- Wildlife habitat needs vary substantially by species. It is generally true however, that healthy and sustainable wildlife populations can be supported where there is a diverse mix of plant communities with multiple seral stages to supply structure, forage, cover, and other specific habitat requirements. Managing for a diverse mix of plant communities is thus an important component of managing for a diversity of species. Impacts on wildlife habitat are described in greater detail in section 4.3.2.1, Priority Species and Vegetation.
- Habitat conditions and quality are directly linked to the health, vigor, and cover of vegetation communities, particularly desired native plant communities that fish and wildlife species depend on, as well as soil conditions and water quality and quantity.
- Impacts on populations exceeding current carrying capacity that would not reduce those populations below carrying capacity would not be considered significant.
- Impacts on terrestrial wildlife from displacement depend on the location, extent, timing, or intensity of the disruptive activity. Furthermore, impacts from displacement would be greater for wildlife species that have limited habitat or a low tolerance for disturbance/disruption.
- Habitat would be managed in coordination with CPW herd objectives and species-specific plans.
- Currently, sufficient habitat exists to maintain CPW data analysis unit objectives for game species across the D-E NCA.
- Human disturbance/disruption would displace wildlife beyond the actual disturbance/disruption footprint, although some wildlife may adapt over time depending on the nature of the disturbance/disruption and the species being impacted.
- Short-term effects would occur over a time frame of two years or fewer and long-term effects would occur over longer than two years.
- In the context of this analysis, the term “avoidance” means reduced use and does not imply an absence of use by wildlife.
- The health of fish and wildlife species is tied to the health of the priority vegetation on which they depend and thus impacts on priority vegetation would affect fish and wildlife species (see section 4.3.2.1, Priority Species and Vegetation).

Implementing management actions for the following resources would have negligible or no impact on fish and wildlife and are therefore not discussed in detail: Geological and Paleontological Resources, air resources, and national trails.

## **Direct and Indirect Impacts**

Fish and wildlife would be affected under all alternatives, and the condition of their habitats is directly linked to priority vegetation conditions and water quality and quantity (section 4.3.2.1, Priority Species and Vegetation, and section 4.3.2.6, Soils and Water Quality). All wildlife species are nested under at least one priority vegetation type listed in section 4.3.2.1, Priority Species and Vegetation, even if not explicitly stated in that section. Thus, management for (and impacts on) priority vegetation have a direct link to management of fish and wildlife species. Impacts on priority vegetation can be found in section 4.3.2.1, Priority Species and Vegetation. As such, there will be a limited description of impacts on fish and wildlife species habitat within this section. Instead, this section focuses on the indicators listed above.

### ***Impacts from Management of Priority Species and Vegetation***

The nature and types of impacts from priority vegetation management would be similar to those described in section 4.3.2.2, Special Status Species and Natural Communities.

In general, Alternative A would lack a comprehensive landscape-level approach to land planning. This lack of comprehensive planning for priority vegetation would result in habitat management that is applied on a case-by-case basis and that could result in potentially conflicting or inefficient actions, although management flexibility would allow the BLM to adaptively manage resources. Current habitat and fish and wildlife trends would continue.

Under Alternative B, the BLM would emphasize natural processes and restrictions on allowable uses to conserve and protect D-E NCA purposes. Such restrictions would reduce direct disturbances to fish and wildlife and would reduce the likelihood for habitat degradation or removal, habitat avoidance, effects on survival or reproduction, sediment loading, reductions in streamside cover, changes in water quality, or depletions of water supply. There would be little active management of biological resources. As a result, there would likely be slow improvement, or potentially no improvement, of fish and wildlife habitat throughout the D-E NCA. It is possible that the restrictions under Alternative B might slow current trends but would not reverse them.

Under Alternative C, the BLM would emphasize restrictions on uses and active management and would have the most ambitious desired future conditions for priority vegetation. Riparian habitat management would help moderate the hydrologic regime and flow of surface water into the Gunnison River and tributary creeks. Improved riparian conditions could also increase the habitat quality of cold-water fish-bearing streams through reduced sedimentation and increased streamside cover. This could increase survival of fish embryos and juveniles (Skog and Nicholson 2000). As a result, this alternative would have the greatest likelihood for improvement in fish and wildlife indicators.

The BLM would encourage active management for biological systems under Alternative D, although with less ambitious desired future conditions than under Alternative C. As a result, impacts would be similar to, but fewer than, those under Alternative C.

Impacts under the Proposed Plan Alternative would be similar to those described for Alternative D, although the Proposed Plan Alternative would include more ambitious desired future conditions for biological systems and more protections for priority species and vegetation.

***Impacts from Management of Special Status Species and Natural Communities, Non-Special Status Fish and Wildlife, and Soils and Water Quality***

Special status species, fish and wildlife, and soils and water quality management would aim to protect (or in the case of management for soils and water quality, would incidentally protect) species and their habitats from potentially disturbing or disruptive activities.

Impacts from fish and wildlife management under Alternative A would be similar to those described under Impacts from Management of Priority Species and Vegetation under this alternative. No areas would be identified for a prohibition on surface-disturbing activities under Alternative A and thus impacts on habitats and species would continue.

The acres of big game habitat where surface-disturbing activities would be prohibited under each alternative are presented in Table 4.24, Acres of Big Game Habitat Where Surface-disturbing Activities Would Be Prohibited, by Alternative. Prohibiting surface-disturbing activities would only apply in some areas and are not the only type of protection that would be implemented. For example, SSR and season of use (e.g., TL and seasonal travel restrictions) would also be implemented to varying levels under the different alternatives. However, prohibit surface disturbance (PSD) restrictions provide absolute protection to big game habitat from surface-disturbing activities.

Alternatives B, C, D, and the Proposed Plan Alternative include more restrictions to protect fish and wildlife and their habitats than Alternative A. Alternative B would include the most stringent fish and wildlife protections, including protections for nesting migratory birds, big game crucial winter range, and mule deer and elk winter concentration areas. In addition, Alternative B would have the greatest acreage where surface-disturbing activities would be prohibited, and thus would provide the most protection to fish and wildlife and their habitats. Such seasonal closures and prohibitions of surface-disturbing or disruptive activities would reduce the likelihood of habitat degradation or removal, injury or mortality, habitat avoidance, impacts on survival or reproduction, sediment loading, reductions in streamside cover, changes in water quality, and water supply depletion during time periods and in the areas when and where these restrictions are implemented.

Restrictions and prohibitions on surface-disturbing activities under Alternative C and the Proposed Plan Alternative would be similar to those under Alternative D, although less stringent. Elk and mule deer winter concentration areas would be closed for a shorter time than under Alternative B; and the BLM, in coordination with the CPW, would consider allowing motorized travel in December and March when conditions allow. Impacts would be similar to, although greater than, those in Alternative B.

Restrictions and prohibitions on surface-disturbing activities under Alternative D would be similar to those under Alternative C, although they would be less stringent. Impacts would be similar to, although greater than, those in Alternative C.

**Table 4.24. Acres of Big Game Habitat Where Surface-disturbing Activities Would Be Prohibited, by Alternative**

Species (Total Range in D-E NCA)	Alternative A	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Pronghorn Habitat (33,896 Acres)	0	16,270 (48%)	12,155 (36%)	5,125 (15%)	3,378 (10%)
Mule Deer Overall Range (209,989 Acres)	0	106,996 (51%)	86,446 (41%)	60,433 (29%)	48,156 (23%)
Mule Deer Severe Winter Range (167,245 Acres)	0	91,096 (51%)	72,957 (44%)	50,443 (30%)	40,593 (24%)
Elk Overall Range (146,352 Acres)	0	73,986 (51%)	62,666 (43%)	39,069 (27%)	34,098 (23%)
Elk Severe Winter Range (84,174 Acres)	0	42,708 (51%)	35,307 (42%)	19,043 (23%)	15,600 (19%)

Source: BLM 2012i

### ***Impacts from Management of Fire and Fuels***

General impacts from fire and fuels on fish and wildlife would be similar to those described in section 4.3.2.2, Special Status Species and Natural Communities.

Under all alternatives, impacts from allowing natural, unplanned fire ignitions to burn would be as described in section 4.3.2.1, Priority Species and Vegetation. Under Alternative A, the BLM emphasizes full suppression on the portion of the decision area previously managed by the GJFO. In this area, impacts on fish and wildlife from fire as described above would be minimized. However, full suppression could allow for a large-scale catastrophic fire over the long term as fuels accumulate, increasing the likelihood of impacts from fire as described above.

Restrictions under Alternative B would reduce the BLM's flexibility and efficiency in managing unplanned fires since only minimal manipulation of fire and fuels would be allowed and the BLM would prohibit vegetation treatments. This would cause the greatest impacts on fish and wildlife, as described above. However, by allowing nearly all unplanned fires to burn, the BLM would reduce the likelihood of a large-scale catastrophic fire, and therefore reduce the likelihood of impacts from unplanned fire.

Alternatives C, D, and the Proposed Plan Alternative would emphasize a suite of fuel treatments and would provide the most management flexibility of the five alternatives, resulting in increased protection for fish and wildlife.

### ***Impacts from Management of Scenic Values***

Under all alternatives, areas managed as VRM Class I and II would limit the amount of surface-disturbing activities allowed as described in section 4.3.2.1, Priority Species and Vegetation. Impacts from prohibitions on surface-disturbing activities would be as described under Impacts from Management of Special Status Species and Natural Communities, above. Under Alternative A, the BLM would manage 104,871 acres as VRM Class III, which could lead to surface-disturbing activities and landscape modifications that impact fish and wildlife. Under all action alternatives, all lands within the D-E NCA would be managed as VRM Class I or II, thus having impacts on all fish and wildlife within the decision area. While the distribution of VRM Class I or II acres would vary by action alternative, the total acreage protected would be the same across all action alternatives for mule deer and elk.

Acres of big game habitat managed as VRM Class I and II for Alternative A are presented in Table 4.25, Big Game Habitat Managed as VRM Class I and II, Alternative A.

**Table 4.25. Big Game Habitat Managed as VRM Class I and II, Alternative A**

	<b>Pronghorn Habitat (33,896 Acres)</b>	<b>Mule Deer Overall Range (209,989 Acres)</b>	<b>Mule Deer Severe Winter Range (167,245 Acres)</b>	<b>Elk Overall Range (146,352 Acres)</b>	<b>Elk Severe Winter Range (84,174 Acres)</b>
<b>Acres</b>	1,053	106,007	98,417	86,401	40,890

*Source: BLM 2012i*

### ***Impacts from Management of Recreation***

The nature and type of impacts on fish and wildlife from recreation and recreation management would be similar to those described in section 4.3.2.2, Special Status Species and Natural Communities.

Acres managed as RMAs are presented in section 4.3.2.1, Priority Species and Vegetation. In addition, acres of big game habitat that would exist within managed RMAs under each alternative are presented in Table 4.26, Acres of Big Game Habitat Managed as Recreation Management Areas by Alternative. All action alternatives would have big game habitat designated as an ERMA, SRMA, or both.

Recreation activities that result in greater amounts of human-caused noise would have a greater disruptive impact on wildlife (Knight and Cole 1995). Within the D-E NCA, these activities include concentrated OHV use and recreational target shooting. Pronghorn may be particularly vulnerable to disruptive impacts associated with recreational target shooting, as the range of this species within the D-E NCA tends to overlap with popular recreational target shooting areas.

Lead shot ingestion is also the primary source of elevated lead exposure and poisoning in waterfowl and most other bird species. Lead contamination associated with concentrated recreational target shooting can lead to elevated lead exposure and poisoning of these species (Scheuhammer and Norris 1996; Thomas 1997; Kendall et al. 2009). Lead bioaccumulates in higher trophic levels of an ecosystem, which puts raptor species and other predators at risk of lead poisoning as a result of eating prey that have been exposed to lead left behind from recreational target shooting (Scheuhammer and Norris 1996; Thomas 1997; Kendall et al. 2009).

Under Alternative A, the BLM would not manage recreation through the identification of SRMAs and ERMAs and permit applications would be assessed on a case-by-case basis. By not managing for SRMAs or ERMAs, recreation would be more dispersed. Given expected increased recreation use, this would lead to difficulty in monitoring impacts on biological resources. Increased recreation use in the absence of RMA management could also lead to recreation conflict and subsequent damage to biological resources, as visitor expectations for quality recreation are not met. As a result, the likelihood for impacts caused by recreation would increase throughout the D-E NCA under Alternative A. As such, management would continue to be insufficient to accommodate current and future levels of recreation, which could lead to an increase in impacts on fish and wildlife habitats and species as population and recreation use increase. Impacts could include an increase in the likelihood for injury or mortality, habitat avoidance, interference with special status species movement patterns, and impacts on survival or reproduction. Nearly the entire D-E NCA would be open to recreational target shooting under Alternative A. Wildlife species, including big game such as elk, mule deer, and pronghorn, may avoid habitats in response to recreational target shooting activity. Impacts from lead exposure, as described above,

would also occur under this alternative. For pronghorn within the D-E NCA, this would provide protection for 0 acres of their overall range.

Alternatives B and C, with their emphasis on restrictions and biological resource protection, would include more restrictions on recreation within the D-E NCA, and thus would provide more protection for fish and wildlife and their habitats. ERMA management under Alternative B would be geared to dispersed, multiple-use recreation. This management approach would lead to similar impacts as described under Alternative A, although to a lesser extent. The entire D-E NCA would be closed to recreational target shooting under Alternative B (note that restrictions on recreational target shooting do not apply to hunting), thus eliminating the disruptive impacts on wildlife described above for Alternative A, and reducing impacts from lead exposure as described for Alternative A. For pronghorn within the D-E NCA, this would provide protection for 33,896 acres (100 percent) of their overall range.

Under Alternative C, the BLM would only manage SRMAs, which would aim to draw users to these areas with specific recreation outcomes. However, the types of outcomes and settings that would be managed for in these SRMAs would be consistent with improved biological conditions. Therefore, impacts within these SRMAs would be minimal or lead to progress toward desired future conditions. Recreation management under Alternative C could displace non-targeted dispersed recreation outside of managed recreation areas, with subsequent impacts in those areas similar to impacts under Alternative A. In addition, the BLM would close 104,999 acres (approximately 50 percent of the D-E NCA) to recreational target shooting. This would reduce the area impacted by target shooting as described for Alternative A; however these closures may concentrate this activity in other areas (approximately 50 percent of the D-E NCA), with additional resulting impacts on wildlife species from disruption and lead exposure in those areas. For pronghorn within the D-E NCA, recreational target shooting closures under Alternative C this would provide protection for 23 acres (less than 1 percent) of their overall range.

Under Alternative D, the BLM would manage much of the D-E NCA as SRMAs. SRMA management, particularly in trail-based recreation SRMAs in Cactus Park, Ninemile Hill and Sawmill Mesa, would lead to increased and concentrated use in these areas, causing impacts on fish and wildlife species such as an increased likelihood for injury or mortality, habitat avoidance or displacement, changes in species movement patterns, and impacts on survival or reproduction. The sound associated with concentrated OHV use in the Cactus Park and Ninemile Hill SRMAs could lead to greater likelihood of habitat avoidance or displacement than in the non-motorized Sawmill Mesa SRMA. Non-trail-based recreation SRMAs in Gunnison River, Gunnison Slopes, Cottonwood Canyon and Escalante Canyon would have fewer impacts on fish and wildlife. The BLM would close 156,492 acres (approximately 75 percent of the D-E NCA) to recreational target shooting. This would reduce the area impacted by target shooting as described for Alternative A; however these closures may concentrate this activity in other areas (approximately 25 percent of the D-E NCA), with additional resulting impacts on wildlife species from disruption and lead exposure in those areas. For pronghorn within the D-E NCA, recreational target shooting closures under Alternative D would provide protection for approximately 32,370 acres (95 percent) of their overall range.

Under the Proposed Plan Alternative, more of the D-E NCA would be managed as either an SRMA or ERMA than under any other alternative, except for Alternative D, which could potentially reduce impacts on fish and wildlife outside of managed recreation areas by providing a variety of recreation experiences and options. Impacts from trail-based recreation in the Cactus Park SRMA would be the same as described above for Alternative D. The BLM would close

9,995 acres (approximately 5 percent of the D-E NCA) to recreational target shooting. This would not substantially reduce the target shooting impacts from disruption and lead exposure as described for Alternative A. It is unlikely that these closures would concentrate this activity in other areas of the D-E NCA. For pronghorn within the D-E NCA, recreational target shooting closures under the Proposed Plan Alternative would provide protection for 23 acres (less than 1 percent) of their overall range.

**Table 4.26. Acres of Big Game Habitat Managed as Recreation Management Areas by Alternative**

Livestock Grazing Allocation	Alternative A	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<b>Pronghorn habitat (33,896 acres)</b>					
SRMA	--	0	24 (0%)	32,370 (95%)	23 (<1%)
ERMA	--	31,408 (93%)	0	120	31,379 (93%)
<b>Mule deer overall range (209,989 acres)</b>					
SRMA	--	0	38,719 (18%)	90,666 (43%)	34,034 (16%)
ERMA	--	109,982 (52%)	0	37,522 (18%)	94,037 (45%)
<b>Mule deer severe winter range (167,245 acres)</b>					
SRMA	--	0	29,583 (18%)	34,374 (21%)	26,973 (16%)
ERMA	--	74,458 (45%)	0	60,257 (36%)	62,832 (38%)
<b>Elk overall range (146,352 acres)</b>					
SRMA	--	0	21,411 (15%)	31,309 (21%)	21,940 (15%)
ERMA	--	55,664 (38%)	0	37,388 (26%)	46,614 (32%)
<b>Elk severe winter range (84,174 acres)</b>					
SRMA	--	0	10,898 (13%)	17,293 (21%)	8,961 (11%)
ERMA	--	32,960 (39%)	0	28,431 (34%)	36,647 (44%)

Source: BLM 2012i

### ***Impacts from Management of Livestock Grazing***

The nature and type of impacts on fish and wildlife from livestock grazing would be similar to those described in section 4.3.2.2, Special Status Species and Natural Communities.

The number of acres of big game habitat that would be available and unavailable for grazing under each alternative are presented in Table 4.27, Acres of Big Game Habitat Available and Unavailable for Grazing, by Alternative. With the exception of pronghorn habitat under Alternative B, nearly all (85 percent or more) big game habitats would be available for livestock grazing under all alternatives, with the greatest reduction occurring under Alternative B for all habitats. Under all action alternatives, for most big game habitat, there would be a slight reduction in the acres available for livestock grazing compared with Alternative A, with the exception of mule deer overall and severe winter ranges and elk overall range under Alternative D. Furthermore, for all big game habitats, Alternatives B and the Proposed Plan Alternative would have the most acres unavailable for livestock grazing and open to active movement only. The impacts of livestock grazing in riparian areas, which can impact aquatic species, are discussed in section 4.3.2.2, Special Status Species and Natural Communities.



**Table 4.27. Acres of Big Game Habitat Available and Unavailable for Grazing, by Alternative**

Livestock Grazing Allocation	Alternative A	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<b>Pronghorn Habitat (33,896 Acres)</b>					
Available	33,452	23,374	33,533	33,533	33,103
Open to Active Movement Only	0	956	0	0	0
Unavailable	0	18,054	361	361	789
Unallotted	441	0	0	0	0
<b>Mule Deer Overall Range (209,989 Acres)</b>					
Available	204,921	188,389	209,059	209,617	206,127
Open to Active Movement Only	8,141	12,756	12,097	6,275	11,938
Unavailable	0	21,589	918	361	3,850
Unallotted	5,056	0	0	0	0
<b>Mule Deer Severe Winter Range (167,245 Acres)</b>					
Available	157,521	148,509	153,391	160,656	154,921
Open to Active Movement Only	8,134	12,533	13,018	6,168	11,881
Unavailable	0	5,782	414	0	3,009
Unallotted	1,168	0	0	0	0
<b>Elk Overall Range (146,352 Acres)</b>					
Available	132,512	126,671	128,791	135,383	129,140
Open to Active Movement Only	8,035	11,666	12,358	6,323	12,121
Unavailable	0	3,368	557	0	444
Unallotted	1,159	0	0	0	0
<b>Elk Severe Winter (84,174 Acres)</b>					
Available	80,918	76,473	78,218	79,037	78,372
Open to Active Movement Only	85	4,506	3,501	2,701	2,948
Unavailable	0	759	18	0	417
Unallotted	735	0	0	0	0

Source: BLM 2012i

### ***Impacts from Management of Transportation and Travel***

The nature and type of impacts on fish and wildlife from transportation and travel management would be similar to those described in section 4.3.2.2, Special Status Species and Natural Communities.

Miles of routes open and closed to motorized and mechanized travel are presented in section 4.3.2.1, Priority Species and Vegetation. Under all alternatives, the greatest mileage of routes would be open in pinyon-juniper woodland, sagebrush shrubland, and desert shrub/saltbush communities and the greatest impacts would be on those wildlife species that use these affected habitats. All action alternatives would have fewer miles of open routes than Alternative A, and the greatest mileage of closed routes would occur in Alternative C. Alternatives would also differ in their acreage that would be seasonally closed to motorized vehicles, in part to protect big game winter concentration areas. Alternative A seasonally closes 14,716 acres, Alternative B would seasonally close 44,436 acres, and Alternatives C, D, and the Proposed Plan Alternative would seasonally close 63,441 acres. Such seasonal closures would reduce impacts on big game

including the likelihood for injury or mortality; habitat avoidance; interference with species movement; and impacts on survival or reproduction.

Unlike Alternatives C and D, however, the Proposed Plan Alternative would leave one route—Farmers Canyon—on the northwestern border of the Cactus Park seasonal closure area open to year-round motorized and mechanized travel, until such time that the BLM is able to develop a different route opportunity that overlaps less of the seasonal closure area. The use of the Farmers Canyon route in the winter, in the meantime, will reduce the area of effective seasonal closure in that area, relative to Alternatives C and D. Disturbance impacts to big game in the winter would be slightly higher in the Proposed Plan Alternative from recreational travel along that route.

According to a recent literature review of ungulate response to route development, measurable impacts to ungulate populations begin to manifest themselves when route densities reach 0.5 -1.0 mile of road/square mile. As a result, both deer and elk seek areas of low road density and human activity that provide the security they need for reproduction and survival. Knowledge has been gained not only about ungulate response to roads, but also about modeling this relationship. Results from a variety of research models suggested that a road-effects model based on distance bands provides a more spatially explicit and biologically meaningful tool than other traditional models. Such distance-to-roads analyses are readily accomplished using widely available spatial data layers in a geographic information system (GIS). For this reason, BLM has chosen to use route density as a means to characterize habitat quality for big game within the planning area. Doherty, Naugle, Walker, and Graham (2008), Hebblewhite (2008), Sawyer, Kauffman, and Nielson. (2009) and others have used spatial models to characterize the effects of route density on overall habitat quality within a given geographic area. Big game habitat quality within the geographic boundary of the D-E NCA travel management planning area can be characterized as described in Tables 4.28 and 4.29, based on route densities analyzed across the alternatives. Because areas of proposed seasonal closure would effectively eliminate activity disturbance on routes within such areas, Table 4.29 shows the effective route density during the winter months.

As noted above, the Farmers Canyon exception to the seasonal closure in the Proposed Plan Alternative would result in slightly higher disturbance impacts to big game than under Alternative D. Relative to Alternative D, the seasonal closure exception in the Proposed Plan Alternative would result in reclassifying approximately 9,800 acres (5 percent of the planning area) from the lowest level of route density (Class I, <.05 miles/square mile) into the Class II, III, and IV categories for route density.

**Table 4.28. Route Densities in D-E NCA, Spring–Fall**

Alternative	Class I (<.05 miles/sq. mile)	Class II (.06–2.0 miles/sq. mile)	Class III (2.0–4.0 miles/sq. mile)	Class IV (>4.0 miles/sq. mile)
<b>A</b>	65,336	102,008	44,593	6,457
<b>B</b>	104,450	99,552	14,392	-
<b>C</b>	135,848	79,590	2,957	-
<b>D</b>	85,363	115,662	17,325	44
<b>Proposed Plan Alternative</b>	84,266	110,874	23,159	96

**Table 4.29. Route Densities in D-E NCA, Winter**

Alternative	Class I (<.05 miles/sq. mile)	Class II (.06–2.0 miles/sq. mile)	Class III (2.0–4.0 miles/sq. mile)	Class IV (>4.0 miles/sq. mile)
<b>A</b>	75,309	96,241	40,593	6,252
<b>B</b>	128,174	80,567	9,654	-
<b>C</b>	152,441	63,622	2,331	-
<b>D</b>	112,446	95,735	10,214	-
<b>Proposed Plan Alternative</b>	101,534	98,707	18,058	96

Route densities for Tables 4.28 and 4.29 were calculated based on the “kernel density” tool provided in ArcGIS with a search radius of 100 meters based on the average route avoidance distance for ungulates described in Rost and Bailey (1979) and Freddy, Bronaugh, and Fowler (1986). The kernel density model used in this analysis assumes that all routes have an equal effect upon habitat quality regardless of the classification (road or single track trail) or use (motorized, mechanized, or non-motorized/non-mechanized) of the route, including administrative access only. The model does not adjust for the magnitude of potential effects of the route on habitat quality as influenced by topography or cover.

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

The nature and type of impacts on fish and wildlife from land tenure and land use authorizations would be similar to those described in section 4.3.2.2, Special Status Species and Natural Communities.

Impacts from designation of ROW avoidance and exclusion areas and utility corridors would be as described in section 4.3.2.1, Priority Species and Vegetation. Under Alternative A, ROW exclusion areas would offer the greatest protections to pinyon-juniper woodland and ponderosa pine communities. As a result, the greatest protections would be on those wildlife species that use these habitats. In addition, the fewest protections would be provided to riparian and mountain shrubland communities, and thus the greatest impacts from ROW development would be expected on those wildlife species that use these habitats.

Under Alternative B, all habitats would be designated as a ROW exclusion area, with limited exceptions, thus limiting impacts on fish and wildlife and their habitats within the decision area.

Under Alternative C, all habitats would be designated as a ROW exclusion area, although with more exceptions than under Alternative B. In addition, 926 acres would be managed as a designated utility corridor. This could allow for more impacts on fish and wildlife and their habitats associated with ROW development than under Alternative B, but there would still be fewer impacts than under Alternative A.

Under Alternative D, a large percentage of the D-E NCA would be managed as ROW avoidance, which would allow for more potential ROW development than Alternatives B and C. Pinyon-juniper woodlands and riparian areas would have the greatest acreage protected as ROW exclusion and avoidance. As a result, the greatest protections would be provided to those fish and wildlife species that rely on these habitats. In addition, the fewest protections would be provided to ponderosa pine and mountain shrubland communities, as these communities would be largely ROW avoidance, and thus the greatest impacts from ROW development would be expected on those wildlife species that use these habitats.

Under the Proposed Plan Alternative, all habitats would be designated as a ROW exclusion area, although with more exceptions than under Alternatives B and C. In addition, a 1,022-acre corridor would be managed as a ROW avoidance area along Highways 50 and 141. This could allow for more impacts on fish and wildlife and their habitats associated with ROW development than under Alternative B, but fewer than under Alternatives A and C.

### ***Impacts from Management of Areas of Critical Environmental Concern***

Human uses, such as recreation and development, are generally limited in ACECs, which would protect fish and wildlife from surface-disturbing activities; impacts from prohibitions on surface-disturbing activities would be similar to those described under Impacts from Management of Special Status Species and Natural Communities and Non-Special Status Fish and Wildlife. Acres of priority vegetation and habitats within ACECs under each alternative would be as described in section 4.3.2.1, Priority Species and Vegetation. Under Alternative A, ACECs on 1,900 acres would offer the greatest protections to pinyon-juniper woodland and riparian communities compared with these vegetation communities outside of ACECs. As a result, the greatest incidental protections would be on those wildlife species that use these affected habitats.

Under Alternative B, no ACECs would be managed within the D-E NCA and there would be no protection from ACEC management. Fish and wildlife would receive incidental protection from disturbances in these areas. Impacts would likely be similar to those described for Alternative A.

Under Alternative C, ACECs on 12,405 acres would offer the greatest protections to pinyon-juniper woodland, desert shrub/saltbush, and ponderosa pine communities compared with these vegetation communities outside of ACECs. As a result, the greatest incidental protections would be on those wildlife species that use these habitats.

Under Alternative D, ACECs on 29,243 acres would offer the greatest protections to pinyon-juniper woodland, desert shrub/saltbush, and riparian communities compared with these vegetation communities outside of ACECs. As a result, the greatest incidental protections would be on those wildlife species that use these habitats.

Under the Proposed Plan Alternative, ACECs on 9,011 acres would offer the greatest protections to pinyon-juniper woodland, desert shrub/saltbush, and riparian communities compared with these vegetation communities outside of ACECs. As a result, the greatest incidental protections would be on those wildlife species that use these habitats.

### ***Impacts from Management of Wild and Scenic Rivers***

Managing WSR segments as eligible or suitable for inclusion in the NWSRS would impact riparian-dependent and aquatic species and habitats that are within 0.25-mile of the WSR study segment by protecting the free-flowing condition of the segments, maintaining the ORVs for which the segment was found eligible, and by prohibiting actions that would modify the setting or level of development such that the tentative classification would change. Such protections would reduce the likelihood for impacts on the indicators described at the beginning of this section.

Under Alternative A, 10 WSR segments would be managed as eligible for inclusion in the NWSRS. Eight of these WSRs have species of fish or wildlife as an ORV (see section 4.3.2.2, Special Status Species and Natural Communities). Where fish and wildlife are not identified as an ORV, protections for WSR would still provide incidental protections for fish and wildlife.

Under Alternative B, three WSR segments would be managed as suitable for inclusion in the NWSRS. Fish species are an ORV for two of these segments (see section 4.3.2.2, Special Status Species and Natural Communities). Where fish and wildlife are not identified as an ORV, protections for WSR would still provide incidental protections for fish and wildlife.

Under Alternative C, 10 WSR segments would be managed as suitable for inclusion in the NWSRS. Impacts would be as described for Alternative A.

There would be no management or protection for WSR segments under Alternative D. As a result, there would be no associated protection for aquatic and riparian-dependent species and habitats.

Under the Proposed Plan Alternative, one WSR segment, the Cottonwood Creek, would be managed as suitable for inclusion in the NWSRS. Associated protections for native riparian woodland would protect habitat for nearby fish and wildlife.

### ***Impacts from Management of Watchable Wildlife Areas***

Managing watchable wildlife areas could increase visitation in certain areas and increase the focus on certain species, thereby causing more human disturbance in localized areas. Impacts may include altered behavior and nest placement, unnecessary energy expenditure during flight, and reduced survivorship of young due to abandonment or predation (Knight and Cole 1995). However, by designating these areas and increasing public awareness of wildlife issues, visitation and consequential disruption of other wildlife habitat may be reduced.

There would be no watchable wildlife areas under Alternatives A, B, and C, and thus, no impacts as described above.

Under Alternatives D and the Proposed Plan Alternative, portions of the Escalante Canyon area would be managed as a watchable wildlife area, and wildlife habitat improvements would be carried out in this area. This area would also be managed as an ACEC and would thus be afforded additional protections from that designation. Pinyon-juniper woodlands would be the most common vegetative community within the watchable wildlife area, although riparian areas would have the greatest proportion of their total acreage within the decision area affected. As a result, the greatest impacts would be on those fish and wildlife that rely on these affected habitats.

### **Summary of Impacts from Alternatives**

Impacts from BLM management under each alternative would be directly related to impacts described in section 4.3.2.1, Priority Species and Vegetation, and the magnitude of impacts on fish and wildlife would depend on the acreage of habitats that would be affected. In general, the greatest adverse impacts on fish and wildlife would occur from Alternatives A and B, due to the lack of comprehensive planning in Alternative A and the lack of active management for resources in Alternative B. Under both of these alternatives, current trends would continue. Alternatives C, D, and the Proposed Plan Alternative would incorporate restrictions on activities that would disturb fish and wildlife and their habitats, as well as active management to improve habitats and provide beneficial impacts. Ratings would improve under these alternatives, although at different rates. Alternative C would likely provide the greatest beneficial impacts for fish and wildlife, followed by the Proposed Plan Alternative and then Alternative D.

## Cumulative Impacts

The CIAAs used to analyze potential impacts on wildlife and fisheries vary by species. The CIAAs for terrestrial wildlife are composed of the game management units that intersect the planning area. The CIAA for migratory birds includes the planning area. The CIAA for fisheries covers the same area as the CIAA for water resources: it extends outside the planning area, following fourth-order watershed boundaries.

Cumulative impacts on fish and wildlife are related to those described above for vegetation, since vegetation communities provide the habitat for wildlife species and can affect habitat for fish species (e.g., riparian vegetation). Past, present, and reasonably foreseeable future actions and conditions within the CIAA that have affected and will likely continue to affect fish and wildlife include mineral exploration and development, residential and industrial development, forestry, grazing, recreation, road construction, water diversion and withdrawals, weed invasion and spread, prescribed fires and wildfires, land planning efforts, vegetation treatments, habitat improvement projects, insects and disease, and drought. Many of these activities change habitat conditions, which then cause or favor other habitat changes. For example, wildfires remove habitat, and affected areas are more susceptible to weed invasion, soil erosion, and sedimentation of waterways, all of which degrade habitats. In general, resource use activities have cumulatively caused habitat removal, fragmentation, noise, increased human presence, and weed spread, whereas land planning efforts and vegetation, habitat, and weed treatments have countered these effects by improving habitat connectivity, productivity, diversity, and health.

Climate change could cause an increase or decrease in temperatures and precipitation, which would affect soil conditions, vegetation distribution, water flows, water quality, and water temperature (Ficklin et al. 2010; Lenihan, Draypek, Bachelet, and Neilson 2003; McKenney et al. 2007; Hamann and Wang 2006). Such changes would alter habitat conditions, potentially creating conditions that could favor certain species or communities, weeds, or pests (Hellmann, Byers, Bierwagen, and Dukes 2007).

Under the proposed plan and alternatives, impacts on fish and wildlife would be minimized to the extent practicable and feasible through restrictions, stipulations, closures to mineral exploration and development, recreation, and motorized travel, conditions of approval, and by concentrating development in previously disturbed areas. Habitat conditions would be improved through treatments, weed prevention and control, appropriation of water rights, use of prescribed fire and wildfire, forestry management, and grazing management. In general, all alternatives would work toward achieving land health and thus improving fish and wildlife habitats but would differ in the time and methods used to reach that goal. Current trends would likely continue and land health could be degraded under Alternatives A and B due to the lack of comprehensive planning in Alternative A and the lack of active management in Alternative B. As a result, impacts on fish and wildlife and their habitats would continue, and these alternatives could significantly contribute to cumulative impacts on fish and wildlife. Alternatives C and D would likely make more progress toward improving land health and achieving priority habitat objectives but would differ in the time, methods used, and level of improvement to reach these goals. In particular, Alternative C would combine restrictions on surface-disturbing activities with active habitat restoration and would have the most aggressive priority habitat objectives. Consequently, the incremental contribution of Alternatives C and D to cumulative impacts on fish and wildlife is expected to be less than significant.

#### **4.3.2.4. Noxious and Invasive Weeds**

This section discusses impacts on the noxious and invasive weed program from proposed management actions of other resources and resource uses. Existing conditions concerning noxious and invasive weeds are described in section 3.2.2.4, Noxious and Invasive Weeds.

#### **Methods of Analysis**

This analysis focuses on those management alternatives or actions that have the potential to introduce or spread noxious and invasive weeds throughout the planning area. Detailed impact analysis on weeds within the priority vegetation communities and habitats is provided in section 4.3.2.1, Priority Species and Vegetation, and is referred to in this section.

In the absence of quantitative data, best professional judgment was used, and impacts are sometimes described using ranges of potential impacts or in qualitative terms, if appropriate.

#### **Indicators**

Indicators of adverse impacts on the noxious and invasive weeds program include the following:

- Replacement or substantial invasion of native communities with noxious and/or invasive weeds, to the degree that such invasions cannot be successfully controlled or change the character of the native communities.

Indicators of beneficial impacts on the noxious and invasive weeds program include the following:

- Reduction or eradication of noxious and/or invasive weeds.

#### **Assumptions**

The analysis includes the following assumptions:

- Noxious and invasive weed management actions are aimed at achieving or trending toward achieving BLM Colorado Standards for Public Land Health.
- Noxious and invasive weed management actions are also aimed at achieving or trending toward the desired future conditions shown in the Priority Species and Vegetation section of Chapter 2.
- The degree of impact attributed to any one disturbance or series of disturbances would be influenced by several factors, including location in the watershed; the type, time, and degree of disturbance; existing vegetation; precipitation; and mitigating actions applied to the disturbance.
- Noxious and invasive weeds would continue to be introduced and spread as a result of ongoing vehicle traffic in and out of the planning area, recreational activities, wildlife and livestock grazing and movements, and surface-disturbing activities.
- Weed and pest control would be carried out in coordination with the appropriate county weed and pest control district and owners of adjacent property.
- Activities that would disturb soils could cause erosion, loss of topsoil, and soil compaction, which could affect the ability of native vegetation to regenerate and could facilitate the invasion of noxious and invasive weeds.

- Short-term effects would occur over a time frame of three years or less and long-term effects would occur over longer than three years.
- The BLM would comply with the Colorado Statewide Strategic Plan for Control and Eradication of Noxious and Invasive Weeds.

Implementing management actions for the following resources would have negligible or no impact on noxious and invasive weeds and are therefore not discussed in detail: Geological and Paleontological Resources, soils and water quality; cultural resources; scenic resources; air resources; recreation; science; education; national trails; watchable wildlife areas; tribal interests; public safety; and social and economic conditions.

## Direct and Indirect Impacts

The likelihood for noxious and/or invasive weed introduction and spread within the decision area would be affected under all alternatives, and is tied to a variety of factors. In particular, impacts would be directly tied to impacts on priority species and vegetation (section 4.3.2.1), because the health of vegetation communities is linked to the presence, distribution, and abundance of noxious and invasive weeds. Thus, management for priority species and vegetation would encompass noxious and invasive weed management. Particular impacts related to noxious and invasive weeds are presented below.

### *Impacts from Climate Change Management*

As described in section 4.3.2.1, Priority Species and Vegetation, Alternatives B, C, D, and the Proposed Plan Alternative would incorporate adaptive management. Moreover, the BLM would develop a risk management strategy for addressing climate change impacts. By improving the likelihood of achieving the desired trends for each PPSV element over the long term, the BLM would also reduce the likelihood of noxious and invasive weed invasion.

### *Impacts from Management of Priority Species and Vegetation*

Management to maintain and improve priority vegetation could potentially have incidental impacts on weed spread through noxious and invasive weed removal or maintenance of native vegetation.

The lack of landscape-level planning under Alternative A would allow for current trends to continue and noxious and invasive weeds to spread.

While Alternative B would include restrictions on uses to protect priority vegetation, the BLM would not focus on using vegetation treatments to improve vegetation community conditions except in cases where priority vegetation and habitats are threatened with substantial degradation. This could limit the improvement of vegetation communities and weeds could continue to spread.

Under Alternatives C, D, and the Proposed Plan Alternative, the BLM would implement vegetation treatments that would improve the overall health of vegetation communities, make them less susceptible to weed invasion over the long term, and often remove weeds. However, vegetation treatments also carry the risk of spreading weeds. Alternative C would aim to achieve higher objectives than Alternative D and the Proposed Plan Alternative.



### ***Impacts from Management of Special Status Species and Natural Communities and Non-Special Status Fish and Wildlife***

Seasonal prohibitions on surface-disturbing activities in certain areas, such as within 0.5 mile of special status raptor nests and within 0.25-mile of other raptors nests in the breeding season, would reduce the likelihood of weed introduction and spread in these areas. In addition, management to maintain and in some cases improve fish and wildlife habitat could have impacts on weed spread through noxious and invasive weed removal or maintenance of native vegetation.

Under Alternative A, the BLM would prohibit surface-disturbing activities near special status species habitat, which would protect certain areas and would limit weed vectors. As a result, the likelihood for weed introduction or spread would be reduced in these areas.

Alternative B would include more restrictions for special status species than Alternative A, including restricting activities in occupied Colorado hookless cactus habitat to lower weed spread. Other restrictions would be as described in section 4.3.2.2, Special Status Species and Natural Communities. Such measures would not only reduce sources of weeds but would also help to sustain healthy, native vegetation throughout the planning area, which would make it less susceptible to weed invasion.

Alternatives C, D, and the Proposed Plan Alternative would include increased restrictions for special status species and would also actively treat noxious and invasive weeds in occupied Colorado hookless cactus habitat to lower weed spread. Alternative C would do the most of all alternatives in reducing and preventing the spread of noxious and invasive weeds in these areas.

### ***Impacts from Management of Noxious and Invasive Weeds***

Weed control and prevention measures would help to reduce the cover of weeds in the planning area and prevent the introduction and spread of weeds over the long term. The herbicide use protocols and standard operating procedures as described in the programmatic EIS for vegetation treatments using herbicides (BLM 2007b) would be followed to reduce impacts on non-target vegetation from herbicide treatments.

Under all alternatives, the BLM would implement noxious and invasive weed prevention measures to contracts, permits, and cooperative agreements, would focus weed inventory surveys and treatments on high use areas, and would require the use of weed-free materials. These actions would help to prevent the spread of noxious and invasive weeds throughout the planning area.

Management under Alternative A would result in continuation of current trends within the planning area, including weed introduction and spread. However, the BLM would contain and eradicate State A-list and select BLM species of concern.

Under Alternative B, the BLM would contain and eradicate the same noxious and invasive weeds as Alternative A, although the BLM would implement additional weed measures. However, by not emphasizing active management techniques, the BLM would make limited progress in removing noxious and invasive weeds and could allow for weed introduction and spread in susceptible areas.

Alternative C would combine surface disturbance prohibitions with active management techniques, including weed removal. The BLM would contain and eradicate all State listed species and selected BLM species of concern and the BLM would implement additional weed measures to prevent weed introduction and spread. As a result, this alternative would have the

greatest impact on weeds in the decision area by reducing weed vectors, weed introduction, and spread and by reducing the distribution and abundance of weeds.

Impacts under Alternative D would be similar to those described for Alternative C, although the BLM would contain and eradicate fewer species: State A- and B-listed species and selected BLM species of concern.

Impacts from weed management under the Proposed Plan Alternative would be the same as those described for Alternative C.

### ***Impacts from Management of Fire and Fuels***

Some activities, such as planned and unplanned fire, would result in a short-term increase in the likelihood for weed introduction or spread by disturbing soil and removing vegetation. In addition, the increase in soil nutrients following fire may favor some invasive plant species. By stabilizing soils and re-establishing native vegetation, emergency stabilization and rehabilitation efforts can help prevent weed spread and invasion. In some instances, unplanned fire in lower-elevation sagebrush and salt desert shrub communities could have long-term effects by resulting in conversion of these fire-intolerant areas to cheatgrass or other invasive annuals. These invasive species can change the fire regime, potentially affecting adjacent desired vegetation communities.

Under Alternatives A, C, D, and the Proposed Plan Alternative, the BLM would use post-fire emergency stabilization and rehabilitation, which would help to re-vegetate affected areas and prevent the introduction or spread of noxious and invasive weeds.

Alternative B would not emphasize post-fire emergency stabilization and rehabilitation, which could allow for weed introduction and spread in affected areas.

### ***Impacts from Management of Wilderness and Wilderness Study Areas***

In wilderness and the WSA, weed treatments may be limited to non-mechanized methods, which could limit the BLM's ability to treat weeds if a large weed infestation were discovered. Management to preserve, protect, or enhance the naturalness of the Wilderness or WSA would reduce weed vectors and thus would reduce the incidence of noxious and invasive weed introduction and spread throughout the D-E NCA.

The focus of Alternative B and the Proposed Plan Alternative on untrammelled wilderness values would limit the BLM's ability to conduct weed treatments in the Wilderness and the WSA. In contrast, Alternatives A, C, and D allow those treatments. The construction of developments in the Wilderness and WSA in Alternatives C through the Proposed Plan Alternative would potentially increase weed spread in the Wilderness and WSA. This impact may be more pronounced under Alternatives B and the Proposed Plan Alternative, where weed treatments would be more restricted.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Under Alternatives A, C, and D, the BLM would not manage for lands with wilderness characteristics and there would be no reduction in the sources of weeds or susceptibility to weeds in these areas.

The BLM would manage for 21,816 acres of lands with wilderness characteristics under Alternative B. Surface-disturbing activities would be prohibited in these areas, which would not

only reduce sources of weeds but would also help to sustain healthy, native vegetation, which would make these areas less susceptible to weed invasion. Under the Proposed Plan Alternative, the BLM would manage for fewer acres of lands with wilderness characteristics (13,597 acres) and would apply SSR restrictions in these areas. This could allow for increased susceptibility to weed invasion, compared to Alternative B.

### ***Impacts from Management of Livestock Grazing***

If managed improperly, livestock can contribute to the spread of weeds by transporting weed seeds in their coat or manure. In general, the more acres that are available for grazing under a given alternative, the greater the risk for impacts. If impacts from grazing were discovered, the BLM would modify grazing practices by changing AUMs or by using livestock exclosures. The construction and maintenance of range improvements could also lead to an increase in weeds from surface disturbance as well as from contaminated equipment used for construction and maintenance. In some cases, livestock can be used to control certain weed species.

Under Alternative A, the BLM would continue to limit livestock use to active movement (see Glossary) only on 8,141 acres, which would protect certain areas from disturbance caused by livestock and would limit weed vectors. As a result, the likelihood for weed introduction or spread would be reduced in these areas.

The BLM would limit livestock use to active movement only on 12,756 acres and close the most acres to livestock grazing under Alternative B. In addition, the BLM would implement grazing management techniques to not only reduce sources of weeds but also to help sustain healthy, native vegetation throughout the planning area, which would make it less susceptible to weed invasion. Alternative B would also place a limitation on livestock developments, which would reduce weed spread.

Under Alternative C, the BLM would limit livestock use to active movement only on 17,056 acres. However, under Alternative C, grazing management would be more reactive, and the BLM would manage more intensively or implement closures only when biological resource objectives are not met. This delay in management could allow for weed introduction or spread in certain areas.

Impacts from livestock grazing under Alternative D would be similar to those described for Alternative C, although the BLM would limit livestock use to active movement only on 6,275 acres, and livestock grazing would be allowed on the greatest number of acres of any of the alternatives, resulting in impacts over a larger area.

Impacts from livestock grazing under the Proposed Plan Alternative would be similar to those described for Alternative C, although the BLM would limit livestock use to active movement only on 12,510 acres.

### ***Impacts from Management of Transportation and Travel***

In general, reducing public access would reduce the likelihood of weed invasion throughout the decision area. More acres with designated routes in the decision area usually result in greater likelihood of weed introduction or spread. Limiting motorized travel to designated routes would reduce weed vectors and thus would reduce the incidence of noxious and invasive weed introduction and spread throughout the D-E NCA.

Under Alternative A, the BLM would continue to close 4 miles of routes to public travel, which would protect certain areas from disturbance caused by vehicles, hooves, and feet and would limit

weed vectors. As a result, the likelihood for weed introduction or spread would be reduced in these areas.

The BLM would reduce travel route density under Alternative B and would close 282 miles of routes to public travel. Such measures would not only reduce sources of weeds but would also help to sustain healthy, native vegetation throughout the planning area, which would make it less susceptible to weed invasion. However, by not emphasizing rehabilitation of closed routes, the BLM would not make much progress in removing noxious and invasive weeds and could allow for weed introduction and spread in susceptible areas.

Under Alternatives C, D, and the Proposed Plan Alternative, the BLM would close 351, 220, and 144 miles, respectively, to public travel and would use active management techniques such as rehabilitation of closed routes. These measures would have the greatest impact in reducing the likelihood of weed spread throughout the D-E NCA.

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

Surface disturbance caused by permitted activities could increase the likelihood for weed introduction and spread. In particular, ROWs may be linear and may extend for many miles, increasing the potential for weeds to be introduced or spread over large distances. Reclamation and weed management requirements as part of lease stipulations or conditions of approval would reduce this impact.

Land exchanges and acquisitions could improve the BLM's ability to treat and prevent weed invasion by reducing fragmentation of land ownership throughout the planning area.

Under Alternative A, the BLM would identify 91,327 acres as unsuitable for public utilities, which would protect certain areas from surface disturbance and would limit weed vectors. As a result, the likelihood for weed introduction or spread would be reduced in these areas.

Under Alternatives B, C, D, and the Proposed Plan Alternative, the BLM would prohibit surface-disturbing activities in some areas (Table 4.3), and would thus reduce weed vectors and weed introduction or spread. Surface-disturbing activities would be prohibited over the greatest acreage under Alternative B.

Management of ROW avoidance and exclusion areas (Table 4.14) would also reduce weed vectors and weed introduction or spread. Such measures would not only reduce sources of weeds but would also help to sustain healthy, native vegetation throughout the planning area, which would make it less susceptible to weed invasion. Alternative B would manage the entire decision area as a ROW exclusion area, with certain exceptions. Alternative C would manage nearly all of the decision area as a ROW exclusion area, with the exception of 926 acres that would be managed as a designated utility corridor. The Proposed Plan Alternative would manage the utility corridor under Alternative C as a ROW avoidance area instead, and would also manage a 96-acre corridor along Highway 50 as a ROW avoidance area. Exceptions for ROW exclusion would be provided under both Alternative C and the Proposed Plan Alternative. Because Alternative B would allow the fewest exceptions and would manage the most acres as ROW exclusion, it would provide the greatest protection against weed spread due to ROW development.

### ***Impacts from Management of Areas of Critical Environmental Concern***

ACECs generally limit surface-disturbing activities and thus the likelihood for weed introduction and spread. As a result, the more acres managed as ACECs, the less likely noxious and invasive

weeds would be introduced or spread in these areas. In the decision area, all ACECs except Big Dominguez Canyon (Alternative C) and Escalante Canyon (Alternative D and the Proposed Plan Alternative) would prohibit surface-disturbing activities. Escalante Canyon ACEC would apply SSR limitations and would provide a reduced level of protection against weed spread. Surface-disturbing activities would not be restricted or prohibited in the Big Dominguez Canyon ACEC although grazing management and route designation and group size limitations could provide some protection against weed spread from these types of activities.

Acres of ACECs within each priority habitat type that would be managed under each alternative are presented in Table 4.15. Alternative D would designate the most acres as ACECs, whereas Alternative B would not designate any and would not provide any protection against noxious and invasive weeds.

### ***Impacts from Management of Wild and Scenic Rivers***

WSRs generally limit surface-disturbing activities and thus the likelihood for weed introduction and spread. As a result, the more acres managed as suitable for inclusion in the NWSRS, the less likely noxious and invasive weeds would be introduced or spread in these areas.

Miles of WSRs that would be managed under each alternative are presented in section 4.3.2.2, Special Status Species and Natural Communities. Alternative C would manage the greatest mileage as suitable for inclusion in the NWSRS, and Alternative D would not manage any.

### **Summary of Impacts from Alternatives**

Under Alternative A, the current trends of noxious and invasive weeds would continue due to the lack of comprehensive planning for all biological resources. In general, weeds would be managed in accordance with regulations and policy only.

Use of the process described in Appendix A as a systematic approach for resource management under Alternative B would improve management for noxious and invasive weeds and provide beneficial impacts on the noxious and invasive weeds program. Adverse impacts from resource uses would be reduced, as the BLM would implement the most stringent restrictions on surface-disturbing activities. However, lack of active management under Alternative B would prevent long-term reductions in noxious and invasive weed cover. As a result, current noxious and invasive weed trends would likely continue.

Under Alternative C, the BLM would focus on resource protection, similarly to under Alternative B, although would add active management of resources. It would have the greatest beneficial impact of all alternatives in reducing noxious and invasive weeds and preventing weed introduction and spread.

Alternatives D would use a similar management strategy as Alternative C, using restrictions on surface-disturbing activities and active management to reduce noxious and invasive weeds and provide beneficial impacts. However, weed objectives would be lower compared to those under Alternative C and there would more miles of routes open to public use. As a result, although there would likely be an overall reduction in noxious and invasive weeds, it would occur at a slower rate than under Alternative C. The management program causing the greatest adverse impacts on noxious and invasive weeds would likely be transportation and travel management.

Management under the Proposed Plan Alternative would have fewer restrictions and less aggressive priority habitat objectives than under Alternative C, but more than under Alternative D. As a result, beneficial and adverse impacts on noxious and invasive weeds would fall somewhere between the two alternatives. The management programs causing the greatest adverse impacts on noxious and invasive weeds would likely be transportation and travel management.

## Cumulative Impacts

The CIAA used to analyze cumulative impacts from the management of noxious and invasive weeds extends outside the planning area, following fourth-order watershed boundaries that completely or partially overlap the planning area. The fourth-order watersheds were used as the basic unit of analysis, because the scope of cumulative influence would be at the watershed scale and is not expected to extend beyond this scale. Noxious and invasive weeds can also be dispersed into the planning area by upstream waterways and carried downstream from the planning area.

Past, present, and reasonably foreseeable future actions and conditions within the CIAA that have affected and will likely continue to affect the management of noxious and invasive weeds include forestry, grazing, recreation, road construction, ROWs, weed invasion and spread, prescribed fires and wildfires, land planning efforts, vegetation treatments, habitat improvement projects, insects and disease, and drought. Many of these activities create conditions that cause or favor other vegetation changes. For example, wildfire causes vegetation removal, which makes affected areas more susceptible to weed invasion and soil erosion. Drought conditions reduce vegetation health, which makes vegetation prone to insect infestation or disease. In general, resource use activities have cumulatively caused vegetation removal, fragmentation, weed spread, soil compaction, and erosion, whereas land planning efforts and vegetation and weed treatments have countered these effects by improving vegetation connectivity, productivity, diversity, and health.

Climate change within the CIAA could cause an increase or decrease in temperatures and precipitation, which would affect soil conditions, vegetation health, and water availability. Such changes would alter the conditions to which vegetation communities are adapted, potentially creating conditions that could favor certain species or communities, weeds, or pests.

Under the Proposed Plan Alternative, impacts from the management of noxious and invasive weeds would be minimized to the extent practical and feasible through restrictions; stipulations; closures to mineral exploration and development, recreation and motorized travel; conditions of approval, and by concentrating development in previously disturbed areas. Vegetation conditions would be improved through treatments, weed prevention and control, habitat improvements, use of prescribed fires and wildfires, forestry management, and proper grazing practices. In general, all alternatives would work toward achieving land health and reducing weeds but would differ in the time and methods used to reach that goal. Current trends would likely continue under Alternatives A and B due to the lack of comprehensive planning in Alternative A and the lack of active management in Alternative B. As a result, impacts from noxious and invasive weeds would continue, and these alternatives could significantly contribute to cumulative impacts on noxious and invasive weeds. Alternatives C, D, and the Proposed Plan Alternative would likely make more progress toward reducing noxious and invasive weeds but would differ in the time and methods used to reach these goals. Consequently, the incremental contribution of Alternatives C, D, and the Proposed Plan Alternative to cumulative impacts on noxious and invasive weeds is expected to be less than significant.

#### **4.3.2.5. Fire and Fuels**

Impacts on resources and resource uses resulting from implementation of the fire and fuel program are discussed in those particular resource sections in this chapter. Impacts on fire and fuels generally result from activities that affect fire intensity and frequency, fire suppression efforts, and fuel treatments.

### **Methods of Analysis**

#### ***Indicators***

Indicators of adverse impacts on fire and fuel management include the following:

- Alteration of vegetative cover (standing and non-standing) that results in a substantial upward shift in the FRCCs of the planning area (away from natural range of variability)
- A substantial increase in the risk of wildfire ignitions
- Management actions that substantially inhibit a response to wildfires or treatments that reduce the consequences from wildfire

Indicators of beneficial impacts on fire and fuel management include the following:

- Alteration of vegetative cover that results in a substantial downward shift in the FRCCs of the planning area (toward natural range of variability)

#### ***Assumptions***

The analysis includes the following assumptions:

- Fire is an important functional, natural disturbance in many of the ecological systems found in the planning area.
- A direct relationship exists between the density of human use within the planning area and the frequency of human-caused fires, especially in the Gunnison River corridor;
- A direct relationship exists between fuel loading and potential fire intensity, severity, size, and fire suppression costs;
- Human-caused wildfires will be suppressed;
- Demand for fuel treatments would likely increase over the life of this plan; and
- Most fires in the planning area have natural causes (e.g., lightning strikes).

Implementing management actions for the following resources would have negligible or no impact on fire and fuels and are therefore not discussed in detail: Geological and Paleontological Resources, air resources, science, education, land tenure and land use authorizations, WSRs, national trails, and watchable wildlife areas.

## Direct and Indirect Impacts

### *Impacts from Management of Priority Species and Vegetation, Special Status Species and Natural Communities, Non-Special Status Fish and Wildlife, and Noxious and Invasive Weeds*

Managing habitat for a variety of wildlife species could include conducting vegetation manipulation, prescribed fire, or managing unplanned wildfire for multiple objectives (including resource benefit). Under all alternatives, this would affect the wildfire management program by reducing costs and potential for large, damaging unplanned fires.

Under all alternatives, vegetation treatments could reduce fuel loading, which would affect fire intensity and allow fires to be more easily controlled.

In general, non-human-caused wildfires would be allowed to burn under Alternative B. However, rehabilitation efforts would generally not be pursued (e.g., post-fire seeding). Lack of post-fire rehabilitation would allow invasive species such as cheatgrass to become more prevalent on the landscape, which can shift fire regimes and increase fire behavior potential. The lack of vegetation treatments under this alternative would also produce more late seral vegetation communities that are more prone to high intensity wildfires.

By contrast, Alternative C would allow the most vegetation and weed treatments, serving to decrease fuel load and vegetation density across the planning area. This management flexibility would decrease the intensity of wildfires and allow fires to be more easily controlled. Vegetation treatments also create early seral stage vegetation communities, which generally fuel low-intensity fires. By creating mosaic vegetation patterns and natural fuel breaks, and by promoting healthy, diverse vegetation communities, wildfires do not become as large as wildfires in areas that lack a mosaic of age classes. Specifically, efforts to reduce the incursion of non-native annual grasses (primarily cheatgrass), encroachment of shrubby vegetation, buildup of biomass in forested areas, and proliferation of noxious and invasive weeds would help to achieve this effect. Similarly, treatments for habitat improvement and forage would reduce fuels and reduce the likelihood for high-intensity stand-replacing fires.

Alternatives C and D would also allow the use of unplanned ignitions for multiple objectives (including resource benefit) in pinyon-juniper woodlands, ponderosa pine, mountain shrub and desert shrub and saltbush communities, which would increase flexibility and efficiency by mitigating against unplanned, damaging fires in those areas. However, prohibiting vegetation treatments and suppressing all fires in late successional and old growth pinyon-juniper communities would increase fire suppression costs over the life of this plan. Suppressing fires in late successional old growth in these areas would lead to large fires in the future due to less fire scar on the landscape that interrupts the continuity of fuels that carry these fires. Impacts under Alternative D would be similar to those described for Alternative C but would be less pronounced, because priority habitat objectives are less ambitious. For example, noxious and invasive weeds management under Alternative D would only emphasize containing and eradicating State A- and B-listed species, whereas Alternative C would emphasize all State listed species, an action that would further reduce fuel load versus Alternative D.

Due to the similarity in objectives and management actions, impacts under the Proposed Plan Alternative would be similar to those under Alternatives C and D. However, the Proposed Plan Alternative would require establishing research plots in desert shrub and salt brush prior to conducting vegetation treatments, an action that could delay treatments. Few, if any, vegetation



treatments to support fire and fuel objectives are anticipated in the salt desert shrub community. In addition, avoiding planned and unplanned fire in ancient pinyon-juniper woodlands would decrease flexibility and efficiency and would not mitigate against unplanned, damaging fires in those areas.

### ***Impacts from Management of Fire and Fuels***

Management actions that are intended to improve, create, or reestablish healthy ecological conditions in various vegetation types benefit the fire and fuel program (and associated PPSV goals and objectives) by promoting the most efficient use of fire and fuel fire management program resources. In addition, allowing a range of fuel treatment options and providing the possibility to use unplanned wildfire for multiple objectives (including resource benefit) where appropriate provides needed management flexibility to reduce large fire costs and achieve fire and fuel goals and objectives.

Current management under Alternative A emphasizes full suppression on the portion of the decision area previously managed as part of the GJFO. Only a limited number of hazardous fuel projects have occurred in higher elevations on the northwest portion of the decision area, leading to impacts involving cheatgrass conversion issues as described under Priority Species and Vegetation.

While Alternative B would allow unplanned ignitions for multiple objectives (including resource benefit) over the greatest area (208,568 acres), the overall impact from this alternative would be a decrease in the fire and fuel program's flexibility and efficiency in mitigating against unplanned, damaging fires, because Alternative B would only allow minimal manipulation of fire and fuel and would prohibit vegetation treatments. Also, the lack of post-fire rehabilitation under this alternative could lead to significant cheatgrass conversion issues as described under Priority Habitat and Vegetation.

Despite allowing unplanned ignitions for multiple objectives (including resource benefit) on fewer acres (182,420 and 169,893 acres, respectively), fire and fuel management under Alternatives C and D would emphasize a suite of fuel treatments (mechanical, chemical, and biological) and would provide the most management flexibility of any alternatives, resulting in reduced large fire costs.

Similarly to under Alternative B, unplanned ignitions would be allowed on 208,565 acres under the Proposed Plan Alternative. However, the Proposed Plan Alternative proposes the same management flexibility and efficiency in mitigating against unplanned, damaging fires as under Alternatives C and D. For example, unplanned fires that do occur could be rehabilitated as needed under the Proposed Plan Alternative to minimize cheatgrass conversion.

### ***Impacts from Management of Soils and Water Quality***

Slopes, soil types, distance from riparian areas, and other factors associated with these resources all impact the options available for wildfire and fuel management. Impacts on the fuel management program could include alterations on fuel treatment design and methods.

Soils and water resource impacts would be similar across all alternatives.

### ***Impacts from Management of Cultural Resources***

Through consultation, Native American Traditional Leaders have remarked that natural ignition fires are not necessarily a threat to cultural values, sites, or natural resources that may be of interest to them, because a natural fire is part of the natural world. However, prescribed fire and arson-caused **wildfire** is of concern. The BLM would continue to consult with Native American Traditional Leaders regarding prescribed fire on a case-by-case basis.

Under all alternatives, the fire and fuel program would continue to avoid implementing fuel treatments in areas with known cultural resources that would be adversely affected by fire and vegetation treatments. Cultural sites can modify the design of fuel treatments and sometimes cause the fuel treatment unit to be withdrawn from treatment. As a result, these areas would be at a higher risk for larger, more intense **wildfires**.

Depending on the results of consultation with Native American tribes, managing the 2,034-acre High Park Heritage Area under Alternative B could reduce vegetation treatment options in areas of FRCC 2 and 3 that could lead to high severity wildfires.

### ***Impacts from Management of Wilderness and Wilderness Study Areas***

To preserve wilderness character in the Dominguez Canyon Wilderness or wilderness characteristics in the Dominguez Canyon WSA, there would be little to no fuel management in wilderness under any alternative. Likewise, fire management response to wildfire in wilderness would be limited so not to impair the area's wilderness characteristics. Limiting post-fire rehabilitation options in Alternative B (and to a lesser extent in Alternatives C, D, and the Proposed Plan Alternative) could result in cheatgrass conversion and an upward shift in FRCC, leading to a greater potential for high severity wildfires and a change to unnatural fire regimes.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Under Alternatives A, C, and D, the BLM would not commit to preserving inventoried wilderness characteristics outside of the designated Wilderness and WSA. Under Alternative B, the BLM would preserve inventoried wilderness characteristics on 21,816 acres, resulting in impacts within that area that are similar to those described under Impacts from Management of Wilderness and WSA. Under the Proposed Plan Alternative, the BLM would preserve inventoried wilderness characteristics on 13,597 acres, resulting in impacts within that area that are similar to those described under Impacts from Management of Wilderness and WSA.

### ***Impacts from Management of Scenic Values***

Alternative A would allow planned ignitions and mechanical treatments over the greatest acreage, by virtue of designating 104,871 acres as VRM Class III, where these fire and fuel management techniques would not conflict with scenic values management.

Impacts would be greater under the action alternatives, because they would designate the entire decision area as VRM Class I or II, potentially altering the design of planned ignitions and mechanical treatments to meet VRM objectives. Because the entire decision area would be managed as VRM Class I or II under each action alternative, the difference in impacts across these alternatives would be negligible.

### ***Impacts from Management of Recreation***

Increased recreation use increases the risk of human-caused ignitions. Impacts from recreation would be greatest under Alternatives D and the Proposed Plan Alternative, where recreation is most emphasized and the most acres would be managed as SRMAs and ERMAs (128,215 acres in Alternative D and 128,104 acres in the Proposed Plan Alternative) likely leading to the greatest potential for human ignition. The same types of impacts would be expected on 109,979 acres under Alternative B, and 38,719 acres under Alternative C. By not designating any SRMAs or ERMAs, Alternative A would emphasize a less-structured management approach to recreation that could actually result in a greater risk of human-caused ignitions.

The area with the greatest potential for impacts from recreation would be, under Alternatives D and the Proposed Plan Alternative, in Cactus Park, where issuance of Class III organized group SRPs, construction of campgrounds, and the development of new trail systems would encourage more visitation and longer stays, thus increasing the risk of human-caused ignitions.

In addition, under all alternatives use on the Gunnison River by rafters has the potential to lead to human-caused fires in the riparian area that could kill a limited amount of cottonwood galleries. These impacts would be most pronounced under Alternative A, which does not include limits on overnight camping or group size.

Recreational target shooting has the potential to increase risk of human-caused ignitions, particularly when exploding targets are used. Alternative A allows target shooting throughout the entire D-E NCA (with the exception of three developed recreation sites), thus resulting in the greatest impacts. Alternatives C and D close large portions of the D-E NCA to recreational target shooting (50 percent and 75 percent, respectively), thus reducing impacts from this activity. The Proposed Plan Alternative would close a small portion of the D-E NCA (approximately 5 percent) and impacts would be similar to those described for Alternative A. Alternative B closes the entire D-E NCA to target shooting, thus eliminating this impact entirely.

### ***Impacts from Management of Livestock Grazing***

Livestock grazing may reduce fuel loading in certain areas, but quantifying the impact on wildfire can be difficult, because the effect of grazing is related to the fuel type where a fire burns. The impact is greatest where grass fuel types are the main carrier of the fire and only a small percentage of lands grazed in the decision area meet this criterion. Therefore, the effect on wildfire is considered to be consistent across all alternatives.

### ***Impacts from Management of Transportation and Travel***

Transportation and travel management affects the wildfire program by way of increased risk of human-caused ignitions. All forms of travel encourage the spread of invasive weeds, particularly cheatgrass, which can shift fire regimes and increase fire behavior potential. When routes are closed and rehabilitated, they become unavailable for response to wildfires, limiting access opportunities and potentially delaying fire management actions.

The severity of impacts from the action alternatives would be proportional to the number of miles of designated routes in the decision area. Alternative A would have greatest potential for human-caused fire, because it includes the least travel restrictions (716 miles open to public use), thereby increasing the potential for the spread of invasive species and new ignition sources. Impacts from implementation of the Proposed Plan Alternative (551 miles), Alternative D (463

miles open to public use) and Alternative B (386 miles open to public use) would be similar to each other. Impacts from Alternative C (244 miles open to public use) would be the least of any alternative.

### ***Impacts from Management of Areas of Critical Environmental Concern***

Restrictions associated with the management of ACECs may limit fire suppression tactics and fuel treatment methods. ACEC designations may also result in fewer human ignitions due to restrictive management actions. Impacts from ACECs would be most prominent under Alternative D, which would designate three ACECs on 29,663 acres. While designation of the Gunnison River and Escalante Canyon would have negligible impacts on the fire and fuel program because of their predominant vegetation types, restrictions associated with managing the 1,310-acre Gibbler Mountain ACEC may reduce the fire and fuel program's ability to treat ponderosa pine in that area.

Based on ACEC management, Alternative B would allow the greatest range of suppression tactics. Impacts under the Proposed Plan Alternative would be similar, but the designation of Gibbler Mountain ACEC may reduce the fire and fuel program's ability to treat ponderosa pine in that area, as described above.

### **Summary of Impacts from Alternatives**

Current management under Alternative A would limit the fire and fuel program's ability to mitigate against unplanned, damaging fires, because this alternative emphasizes full suppression on the portion of the decision area previously managed as part of the GJFO and because only a limited number of hazardous fuel projects have occurred in higher elevations on the northwest portion of the decision area. Because of the requirement under Alternative A that every fire be suppressed in portions of the planning area, there would be less opportunity to manage wildfires for resource benefit under this alternative. Alternative A would thus have higher short and long term suppression costs on large fires, because there would be fewer management actions available to reduce the fuel loading that leads to large fires and their associated costs.

Under Alternative B, the overall impact would be a decrease in the fire and fuel program's flexibility and efficiency in mitigating against unplanned, damaging fires, because Alternative B would only allow minimal manipulation of fire and fuels and would prohibit vegetation treatments. This could lead to adverse impacts by limiting agency responses to unplanned wildfire. Also, the lack of post-fire rehabilitation under this alternative could lead to significant cheatgrass conversion issues as described under Priority Species and Vegetation. This would lead to adverse impacts by moving FRCC away from the natural range of variability. Large fire costs under Alternative B would be similar to under Alternative A, where restrictions on managing vegetation would lead to fuel conditions that would create larger fires with higher short and long term suppression costs compared to other alternatives.

Alternatives C and D, despite allowing unplanned ignitions for multiple objectives (including resource benefit) on fewer acres (182,420 and 169,893 acres, respectively), would emphasize a suite of fuel treatments (mechanical, chemical, and biological) and would provide the most management flexibility of any alternatives, resulting in reduced large fire costs and beneficial impacts. Compared to Alternatives A and B, future short and long term fire management costs would be lower because of more active vegetation management, which would create fuel conditions across the landscape that are less likely to support large fire growth.

The Proposed Plan Alternative proposes the same management flexibility and efficiency in mitigating against unplanned, damaging fires as Alternatives C and D. The Proposed Plan Alternative has the largest area available to manage fire for resource benefit. Over the long term, this will make the landscape less susceptible to large fires. The Proposed Plan Alternative also gives the BLM the greatest ability to manage vegetation to reduce fuel loading, thus reducing future large fire costs. In addition, the fire management strategies in the Proposed Plan Alternative have the highest potential to limit future large fire costs while recognizing that fire plays a critical role in native ecosystems and that firefighter and public safety are of the highest priority.

## Cumulative Impacts

The CIAA for fire and fuels is delineated by the fourth-order watersheds that completely or partially overlap the planning area. Rather than following administrative boundaries, how wildfires burn depends on fuel, weather, and topography. Because of continuous fuels and historic high fire occurrence, D-E NCA fire management activities could affect fire management and resources outside of the planning area. For example, there is a high likelihood of fires burning from the D-E NCA to the Uncompahgre National Forest, Grand Junction Field Office, and Uncompahgre Field Office. There is also the potential for wildfires to impact private and State lands.

Past and present management actions and natural events within the CIAA have altered the condition of vegetation and natural fire regimes across the landscape. These include fire suppression, vegetation treatments, grazing, timber harvesting, noxious and invasive weed spread, drought, and insect and disease outbreaks. In some cases, areas are now more prone to large, intense fires.

Urban development and recreational activities in the CIAA are expected to increase over the life of the RMP, creating additional potential ignition sources and the probability of wildfire occurrence. Of these two factors, urbanization, and especially the expansion of residential areas, is expected to be the larger contributor on cumulative wildfire impacts. For example, there has been significant residential expansion and wildland-urban interface expansion in the Whitewater area, adjacent to the D-E NCA. The wildland-urban interface is a high-priority suppression area, and suppression in the wildland-urban interface can be more dangerous, time-consuming, and expensive than suppression in undeveloped areas. Additional wildland-urban interface would increase the need for hazardous fuel projects to reduce the risk of wildfires spreading from BLM-administered lands to the wildland-urban interface. Increased wildland-urban interface can also increase costs associated with suppression and is more dangerous to firefighters and the public. Additional fire suppression resources could be needed, including Federal, State, and local agency resources. As the local population grows in areas downwind from the D-E NCA, there would be more potential conflicts from smoke produced from prescribed fires and other impacts from wildfire managed for multiple objectives (including resource benefit).

Changing land use patterns and increased recreation and visitation would also result in the modification of vegetation communities; both trends present new vectors for the introduction of noxious and invasive weeds and non-native vegetation species lacking adequate vegetative cover. These introduced species could eventually alter the fire regime of certain areas and potentially increase the frequency, size, and intensity of wildfires.

As reported in the 2007 Colorado Climate Action Plan developed by the State of Colorado (Ritter 2007), climate change effects within Colorado have included more and larger wildfires. Over

time, cumulative impacts related to climate change could impact wildfire severity and frequency within the D-E NCA.

#### **4.3.2.6. Soils and Water Quality**

This section discusses impacts on soils and water quality from proposed management actions of other resources and resource uses. Existing conditions concerning soils and water are described in section 3.2.2.6, Soils and Water Quality.

### **Methods of Analysis**

#### ***Indicators***

Indicators of adverse impacts on soil and water resources include the following:

- Erosion rates above natural conditions, based on ecological site descriptions.
- Formation of terracettes or pedestals.
- Formation of rills or gullies.
- The inability to meet Colorado Standards for Public Land Health.
- The inability to meet State and Federal water quality standards for surface water (CDPHE 2013b) and groundwater (CDPHE 2013a).
- Declining soil surface health, with soils either unable to support vegetation and crust, or not meeting site potential, based on ecological site conditions (e.g., vegetation type, diversity, density, and vigor).

#### ***Assumptions***

The analysis includes the following assumptions:

- Soil resources would be managed to meet Standard 1 of the Colorado Standards for Public Land Health.
- Water quality would be managed to meet Standard 5 of the Colorado Standards for Public Land Health.
- Improved watershed function benefits both surface and groundwater quality.
- Improved watershed function can contribute towards improved recharge of groundwater aquifer systems and maintenance of base flows in area streams, springs, and seeps.
- Fuel projects as well as planned and unplanned fire that contribute toward establishment of a more “natural” fire regime would have long term benefits to soil and watershed health.
- Projects that help restore watersheds, desirable vegetation communities, or wildlife habitats (including surface disturbance associated with these efforts) would benefit soil and water resources over the long term.

- Soils would be managed to minimize erosion (relative to natural erosion rates) and maintain soil productivity.
- The degree of impact attributed to any one disturbance or series of disturbances would be influenced by several factors, including proximity to drainages, proximity to existing groundwater wells, location within the watershed, time and degree of disturbance, reclamation potential of the affected area, existing vegetation, precipitation, and mitigating actions applied to the disturbance.
- Transportation facilities would be properly designed, constructed and maintained for use designations (BLM minimum standards). New routes, re-routes, or improvements to existing routes would be properly designed and constructed. All routes would receive proper maintenance levels for use designations.
- The BLM would follow BMPs outlined in Appendix L.
- Increased soil erosion above natural rates leads to decreases in water quality.

Implementing management for the following resources would have negligible or no impact on soil and water quality and are therefore not discussed in detail: geological and paleontological resources; air resources; national trails; and watchable wildlife areas.

## **Direct and Indirect Impacts**

Water quality adverse impacts can result from a number of causes, including non-point-source contribution of sediment and associated mineral constituents through natural erosional processes, which can be magnified and accelerated as a result of surface-disturbing activities. Also, leaching of salts and other mineral elements (e.g., selenium) from soils resulting from natural processes or irrigation is another form of non-point source water quality degradation within the planning area. Point sources of water quality contaminants may also come in the form of direct introduction of waste matter to water sources from livestock, wildlife, and humans.

Degradation of water quality within the planning area could result in surface waters no longer capable of supporting existing beneficial uses identified in CDPHE Regulation 35. However, BMPs described in Appendix L would help BLM meet management objectives, preserve water quality, and maintain existing beneficial uses outlined in CDPHE Regulation 35 (CDPHE 2013c).

Surface-disturbing activities occurring in areas of low reclamation potential (e.g., “fragile soils,” slopes greater than 40 percent, soils derived from Mancos Shale) or sensitive areas such as stream channels, floodplains, and riparian habitats are at higher risk for erosion. Disturbance in these areas creates greater potential for erosion and sediment delivery to surface waters, thereby degrading water quality.

Surface-disturbing activities within stream channels, floodplains, and riparian habitats are more likely to alter natural morphologic stability and floodplain function. Morphologic destabilization and loss of floodplain function cause accelerated stream channel/bank erosion, increased sediment supply, de-watering of near-stream alluvium, loss of riparian habitat, loss of fish habitat, and deterioration of water quality (Rosgen 1996). Alteration or removal of riparian habitats can reduce the hydraulic roughness of the bank and increase flow velocities near the bank (National Research Council 2002). Increased flow velocities near the bank can cause accelerated erosion, thereby decreasing water quality.

Surface-disturbing activities can result in removal of essential soil stabilizing agents such as vegetation, soil crusts, litter, and woody debris. These soil features function as living mulch by retaining soil moisture and discouraging annual weed growth (Belnap, Prasse, and Harper 2003). Loss of one or more of these agents increases potential erosion and sediment transport to water bodies, leading to water quality degradation. Subsurface disturbances (e.g., well construction, water developments) can alter natural aquifer properties (e.g., enhance hydraulic conductivity of existing fractures, breach confining units, and change hydraulic pressure gradients), which can increase potential for contamination of surface and groundwater resources along fractures or faults and de-water locally important fresh water sources (BLM 2001d). In near stream alluvial aquifers (typical of groundwater in the planning area) groundwater contamination can be a major and potentially long-term contributor to contamination of surface water (Winter, Harvey, Franke, and Alley 1998). Furthermore, alteration of natural aquifer properties or alteration of natural runoff patterns can result in de-watering of locally important fresh water sources (e.g., groundwater, springs, seeps, fens, and streams).

Direct and indirect negative impacts on soil and water resources can be mitigated through restrictions on surface-disturbing activities (e.g., through restrictions such as PSD and SSR or by restricting allowable uses). Impacts that cannot be avoided would be minimized by the application of BMPs (Appendix L).

Future negative impacts on soil and water resources are anticipated to result from surface disturbance associated with travel and transportation, recreation, livestock grazing, alteration of native/desirable vegetation communities, land use authorizations, and planned fire, unplanned fire, and certain fire suppression tactics. Resource management actions that minimize, preclude, or stipulate surface-disturbing actions would help yield beneficial impacts by maintaining or improving soil health and preserving or promoting proper watershed function and conditions.

Soil resources, especially on steep slopes and in fragile soils, saline soils, or Mancos Shale areas, are susceptible to negative impacts from surface disturbance and compaction, which can lead to accelerated erosion, soil loss, and reduced productivity. Increased erosion would lead to increased sedimentation to area streams decreasing water quality and potentially contributing to morphologic instability. Likewise, soils on steep slopes or those soils identified as being “fragile” or saline can be more difficult to reclaim once disturbed. Increased compaction may also contribute to accelerated erosion and sedimentation as too much compaction can cause infiltration rates and gas exchange rates to decrease. Decreased gas exchange rates can cause aeration problems, induce nitrogen and potassium deficiency, and negatively impact root metabolism, all stressing agents of vegetation, which is a key component of soil stabilization (DeJong-Hughes, Moncrief, Voorhees, and Swan 2001).

Mixing of soil horizons is another concern with surface-disturbing actions, as is loss of the A horizon (i.e., top layer of the soil horizon or the topsoil) through erosional forces (e.g., wind, water). Mixing of topsoil and subsoil and loss of the A horizon remove surface cover for erosion control and organic matter inputs for nutrient recycling. The result is decreased soil productivity in the long term, inhibiting revegetation, decreasing soil reclamation potential, and increasing suitability for noxious and invasive species.

Another impact on soil resources is the degradation of the soil food web. Healthy soils comprise their own ecosystem, including a balance between organic and inorganic matter, air, water, and an interrelated array of organisms collectively referred to as the “soil food web.” The soil food web includes arthropods, earthworms, bacteria, fungi, protozoa, nematodes and living



roots (Tugel, Lewandowski and Happe-vonArb 2000). Management actions that affect soil compaction, vegetative ground cover, irrigation, the water table, and the application of pesticides and herbicides can adversely affect soil health and its ability to provide key functions, which include storing and filtering water, resisting erosion, providing physical support, cycling and storing matter, storing carbon, and sustaining life and society.

***Impacts from Management of Priority Species and Vegetation, Special Status Species and Natural Communities, and Non-Special Status Fish and Wildlife***

Under all alternatives, the goals for priority species and vegetation are to protect, conserve, and enhance communities and wildlife habitat. By protecting, conserving, and enhancing these habitats, the BLM will preserve proper functioning condition of vegetation communities, soils, and watersheds. Proper functioning condition can be achieved as hill slope erosion rates and sedimentation to area streams would be maintained within the natural rates of variability.

These actions would increase opportunities for improving overall ecosystem health and continue preservation of water quality and sustainability of stream flow. These actions would also provide the BLM with the appropriate rights and authorizations through the State of Colorado for managing water resources on Federal lands.

Vegetation treatments would involve using, for example, mechanical treatments, chemical treatments, prescribed fire, or reseeding, to establish or promote desirable plant communities. (However, vegetation treatments are not allowed, except under special circumstances, under Alternative B.) In the long-term, establishment of desirable and functional vegetation communities would enhance natural resource conditions by promoting plants that are well-suited to local environmental conditions, allowing them to thrive without depleting soil health and water supplies to the detriment of other nearby vegetation or resources. They also restore watershed function and condition by establishing vegetation that protects soil from being exposed to erosional forces that can transport soil to water bodies, thereby causing water quality degradation associated with increased turbidity or altering stream channel morphology from sedimentation. In the short term, however, vegetation treatments can strip the soil surface of vegetation, temporarily leaving the soil exposed to erosional forces.

Under Alternative A, vegetation treatments are authorized on a case-by-case basis. Alternative B would not authorize the use of vegetation treatments, unless conditions deteriorate to the point of requiring its use in order to, for example, meet priority vegetation objectives. Alternatives C, D, and the Proposed Plan Alternative would take a more active approach in managing vegetation and would provide the greatest range of opportunities for vegetation treatments that benefit soil and water resource through the removal of undesirable vegetation that degrade conditions for soil and water resources. Of the action alternatives, Alternative C contains the most ambitious objectives for improving soil and water resource conditions.

There would be fewer disturbances to soil and vegetation where surface disturbance prohibitions and SSR restrictions are used. Surface disturbance prohibitions and SSR restrictions would benefit water resources by protecting soil from being exposed to erosional forces that can transport soil to water bodies and cause water quality degradation associated with increased turbidity or alter stream channel morphology from sedimentation.

Alternative B would restrict or adjust allowable uses that are, for example, currently preventing achievement of priority vegetation objectives. Alternatives C and D contain actions that would intensively manage allowable uses that are currently preventing achievement of priority

vegetation objectives. The Proposed Plan Alternative would involve actions from Alternatives B, C, and D. Therefore, surface disturbance prohibitions and SSR restrictions would be used by all action alternatives to manage allowable uses. In total, Alternative B has the most restrictions. Alternatives C, D, and the Proposed Plan Alternative provide more opportunities for habitat rehabilitation of disturbed land.

Actively rehabilitating areas would more quickly return proper ecosystem functions to areas than passively allowing areas to be reclaimed naturally on their own over time. This would include, for example, rehabilitating closed routes and reintroducing appropriate native, wetland obligate plant species to degraded seeps and springs. This would also include vegetation treatments (e.g., introduction of biological controls, chemical treatments, seeding) to improve native vegetation composition and structure in desert shrub/saltbush communities, pinyon-juniper woodland communities, and sagebrush shrublands. This would reduce surface runoff and erosion through the establishment of desirable and functional vegetation communities and habitats. Restoration of vegetation communities and habitats would also promote more efficient water storage in soils helping restore more natural stream hydrographs to area streams. Additionally, riparian restoration promoting establishment of select phreatophytes can affect the quality of groundwater through the uptake of nutrients and pollutants. Phreatophytic vegetation has in the past been used for bioremediation of soil and groundwater toxicity caused by mining and solid waste disposal. Certain species can take up and store particular ions, heavy metals, and other pollutants, which could help improve water quality if degradation were to occur (USFS 2007).

Alternatives C, D, and the Proposed Plan Alternative involve the most opportunities for rehabilitating vegetation communities. This would involve improving soil resource conditions and vegetation cover, both of which minimize the potential for impacts on water resources.

### ***Impacts from Management of Noxious and Invasive Weeds***

Noxious and invasive weeds can result in the development of monocultures, which are typically poorly suited to protect soils from erosional forces and can alter water movement in the soil. Increased erosion and sedimentation to water bodies can result in changes to water chemistry and alter stream channel morphology. Eradication of noxious and invasive weeds could result in short-term surface disturbance, but over the long term, it would benefit soils through surface stabilization with desirable species and reduced erosion potential.

Under all alternatives noxious and invasive weeds would be managed through integrated pest management, in order to control, suppress and eradicate, where possible, noxious and invasive species to support healthy plant communities across the planning area.

The management strategy under Alternatives A, C, D, and the Proposed Plan Alternative would be dictated by weed management plans and would provide the BLM with a suite of options for controlling noxious and invasive weeds and protecting soil resources. By contrast, the proposed focus on passive management under Alternative B would limit the aggressiveness with which the BLM could treat weed infestations, which could result in the expansion of noxious and invasive weeds and the potential replacement of desirable/functional vegetation communities. The loss of desirable vegetation communities could result in the loss of soil stabilization and increased erosion potential. At the same time, limiting weed treatments would be protective of soil health in other ways through limiting the application of toxic herbicides, which can kill much of the soil food web in treatment areas.

### ***Impacts from Management of Fire and Fuels***

Impacts on soil and water quality related to planned and unplanned wildfires are complex and involve changes in nutrient cycling, water infiltration and runoff, and erosion potential (Moody, Martin, Haire, and Kinner 2008; Martin and Moody 2001). Fire-induced increases in runoff and sediment yield from wildlands are generally greatest one to two years following the fire (Helvey 1980; Inbar, Tamir, and Wittenberg 1998; Robichaud 2005) and are typically reduced to background conditions within 10 years (Robichaud 2000). Research has demonstrated that increases in post-fire runoff and sediment yield decline over time. Recovery of post burn runoff and erosion rates to pre-fire conditions usually occurs within 5 years on rangeland sites years (Wright and Bailey 1982) and is dependent on burn severity, vegetation recovery, litter deposition, debris recruitment, and soil water repellency (Pierson et al. 2008). Use of heavy equipment during surface-disturbing tactics to suppress fires can cause soil compaction and displacement which may increase sedimentation to surface water drainages, reducing water quality. Also, if excessive amounts of retardant are applied, soils and water quality could be negatively affected, with the free ammonia acting as a toxin that is harmful to aquatic species and can destroy the soil food web (Kalabokidis 2000). Effective fire prescriptions and post-fire rehabilitation can minimize these impacts.

In the short term, suppressing unplanned fires in areas of excessive fuel buildup can minimize high-severity fires and the associated impacts of vegetation loss, erosion, and water quality degradation. However, continued suppression of fires can result in increased fuel loading and can increase the risk of high-severity unplanned fires and related soil, watershed, and water quality impacts in the long term.

Alternatives A and D would allow for about the same amount of area (167,772 acres and 166,557 acres) of natural unplanned ignitions. Alternatives B and the Proposed Plan Alternative would allow for the most area (208,568 acres) of natural unplanned ignitions, and Alternative C would allow for 181,308 acres of natural unplanned ignitions. Therefore, the suppression of unplanned fires would occur most often under Alternatives A and D. In areas where suppression of unplanned fires occurs, high-severity fires would result in impacts on soil and water resources. While Alternative B would allow for natural fire over a large area, it would not allow for many vegetation treatments or post-fire rehabilitation. In contrast, the Proposed Plan Alternative allows for natural fire and also allows for vegetation treatments and post-fire rehabilitation. Limiting treatments under Alternative B would benefit soils and watershed health in terms of reducing treatment-related compaction, soil disturbance, and chemical applications, but it would also potentially result in larger, hotter fires, which could cause greater damage to the watershed and soil food web in certain areas than a relatively cooler, controlled burn, or a burn that occurred after fuel removal or other treatments.

### ***Impacts from Management of Soils and Water Quality***

Water quality protection measures that involve changes to terrestrial uses in associated watersheds usually benefit soil resources. Minimizing stream sedimentation, stream turbidity and improving water quality usually means minimizing erosion, which means preserving soil integrity and health. Measures to improve or protect water quality often involve reduced disturbance, reduced compaction, and reduced vegetation removal, all of which would be helpful for maintaining soil health.

Alternative A would analyze proposed surface-disturbing projects to determine the suitability of soils to support such projects, but it does not identify surface disturbance prohibitions or

SSR restrictions that could protect soil and, therefore, water resources. Alternatives B and C would provide additional protection for soils through increased diligence and reclamation for surface-disturbing projects in areas with soils with high erosion hazards. Alternatives B, C, and the Proposed Plan Alternative would protect biological soil crusts, with Alternatives C and the Proposed Plan Alternative also requiring mitigation for any disturbances to biological soil crusts. These actions would provide additional protection for soil and water resources over the long term. The Proposed Plan Alternative would also allow for rehabilitation of burned areas, whereas Alternative B would limit the methods and degree of rehabilitation efforts the BLM could use, further limiting management options.

The four action alternatives would provide varying levels of additional protection for water quality and soil health around ephemeral streams. By prohibiting surface-disturbing activities within 50 meters of the edge of the ordinary high-water mark Alternative B would be the most protective. In addition, the 25-meter PSD buffer for all fragile soils (which encompass 86,216 acres within the D-E NCA) identified under Alternatives B and C would prohibit all surface-disturbing actions that could result in accelerated hill slope erosion and sedimentation to area waterways (degrading water quality) impairing soil and watershed function. The Proposed Plan Alternative would apply SSR within the 25-meter buffer to help mitigate impacts on soil and water resources associated with surface disturbances (e.g., recreational facilities). Impacts on soil and water resources would still occur under this alternative but the impacts would be mitigated to the greatest extent practicable. Alternatives A and D do not identify “fragile soils” and therefore would not stipulate any additional protection. Surface-disturbing actions could occur in these areas and increased potential erosion and sedimentation would likely result.

Alternatives C, D, and the Proposed Plan Alternative would enhance soil health and water quality by requiring the BLM to restore degraded and excessively eroding landscapes to more desirable conditions, whereas Alternative B would allow such landscapes to reclaim through passive management. Passive management would likely take longer and be less effective than active restoration actions.

### ***Impacts from Management of Cultural Resources***

In some cases, restrictions on surface-disturbing activities to protect cultural resources could protect soil and watershed health and integrity, particularly where such restrictions overlap fragile soils, Mancos Shale, saline soils, or steep slopes. In other cases, restrictions to protect cultural resources in areas of degraded vegetation may preclude the ability of the BLM to implement restoration measures that could improve soil health and watershed function.

The four action alternatives allow the BLM to restrict recreation or allowable uses in the High Park Heritage Area and in the Leonards Basin Heritage Area if desired natural landscapes and settings are being degraded. This action could help to preserve soil and watershed function by limiting disturbance and reducing erosion and sedimentation. There is no similar action under Alternative A.

Alternatives B and C would protect soil and water resources in the vicinity of sites allocated to Traditional Use, Public Use, Scientific Use, Conservation Use, and Experiment Use through prohibiting surface-disturbing activities within certain buffers. Alternative D would afford limited protections in the vicinity of such sites by applying SSR restrictions within those same buffers. The Proposed Plan Alternative would be the same as Alternative D for sites allocated to all but traditional use, where a smaller buffer would be implemented. Alternative A provides for no such protection and would be less protective of soil and water resources.

### ***Impacts from Management of Wilderness and Wilderness Study Areas***

There is a general prohibition on surface-disturbing activities in wilderness areas that would protect soils in areas where soils are healthy; however, in areas where soils are unhealthy and where native vegetation communities have been degraded, wilderness management measures could limit the BLM's ability to use the most efficient means to treat weeds and to restore disturbed landscapes.

Alternatives C and D would allow for post-fire rehabilitation in some way to prevent substantial degradation, whereas Alternatives B and the Proposed Plan Alternative limit or restrict the BLM's ability to conduct post-fire rehabilitation. The former would have a positive impact on soils and watershed function by promoting establishment of desired vegetative cover and implementing erosion control measures, which would limit the erosion of soils made vulnerable by fire.

Alternatives C and D would close areas within a 100 or 50 meter buffer, respectively, of natural water sources to overnight camping in the Wilderness, and the Proposed Plan Alternative would limit overnight camping in riparian areas to designated sites. By reducing the possibility for soil compaction and vegetation trampling, these actions would provide a greater protection to soil and water resources than Alternatives A and B.

In Alternative C, managing areas within Wilderness Zone 1 as limited to designated or existing routes for horse and foot travel would provide the most protection of any alternative by limiting off-route trampling and compaction of soils and subsequent impacts on water resources in this area. The Proposed Plan Alternative would be similar to Alternative C except that off-route foot travel would be allowed. Because of the group size limitations, impacts would likely be minimal.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Under Alternatives A, C, and D, the BLM would not commit to preserving wilderness characteristics outside of the designated Wilderness and WSA, and would not restrict surface-disturbing activities in those areas. Under Alternative B, the BLM would commit to preserving wilderness characteristics on all inventoried acres (totaling 21,816 acres). This would benefit water resources by prohibiting surface-disturbing activities and motorized and mechanized travel. Under the Proposed Plan Alternative, the BLM would commit to preserving wilderness characteristics on 13,597 acres. This would result in similar impacts as those described for Alternative B, although they would occur over a smaller area. Therefore, Alternative B would allow for the most natural processes to occur, which would benefit soil and water resources.

### ***Impacts from Management of Scenic Values***

Managing for VRM Class I and II would limit major surface-disturbing activities such as new trail developments and transmission lines. Such restrictions would subject fewer areas to anthropogenic sources of erosion and vegetation loss. On the other hand, managing for VRM Class I may also limit flexibility for vegetation treatments, resulting in a potential decline in soil health (and, indirectly, water quality) over the long term. Impacts from vegetation treatments are discussed under Impacts from Management of Priority Species and Vegetation and Impacts from Management of Fire and Fuels.

Under the four action alternatives the entire decision area would be managed as either VRM Class I or II, thereby mostly precluding development that could impact soil resources and resulting

in the types of impacts directly described above. By managing some areas as VRM Class III, Alternative A would provide fewer protections for soil and water resources.

### ***Impacts from Management of Recreation***

Studies indicate that impacts on soils from motorized recreation are generally more pronounced than those resulting from mechanized and non-motorized use but that trail design has the largest impact on soil conditions (Marion and Olive 2006; White, Waskey, Brodehl, and Foti 2006; Wilson and Seney 1994). Research also indicates that intense horse use can cause significant impacts on soil erosion, which could be an even more significant impact in areas with poorly designed or maintained trails (Aust, Marion, and Kyle 2004; Wilson and Seney 1994). Soils in areas that receive intense recreation tend to become compacted, less able to hold moisture, less biodiverse, and more vulnerable to erosion. Consequently sedimentation of area surface waters and associated water quality degradation may result. Localized vegetation loss is also experienced on trails, parking areas and campsites, and the loss of these root systems further degrades soil health and watershed function. Alternatives that direct recreation into areas that have more stable soils can limit the overall damaging effects on soils and watershed function in the planning area.

Dispersed recreation tends to result in more dispersed, less intensive impacts related to compaction and loss of soils. Areas damaged by dispersed recreation can generally return to pre-damaged conditions better than areas that had been used for intensive recreation because of the surrounding vegetation, microclimates, and soil biology needed for the decompaction and recolonization of soils.

Impacts from recreation on trails manifest themselves as compaction, muddiness, displacement, erosion, alteration of natural runoff patterns, and consequently modifications to near stream alluvial aquifer storage potential and recharge. Poorly constructed or poorly maintained trails will have the greatest potential to negatively impact soil resources and watershed function regardless of the type of use. Recreational habits (e.g., creating unauthorized trails and braiding trails) can also play a role in potential trail widening and resultant impacts on soil and water resources as described above. Impacts can be magnified by the intensity of use, especially on poorly designed or maintained trails.

Given the steep topography, shallow, poorly developed soils, and rock outcrops; recreation, fire, and loss of vegetation will exacerbate runoff potential. This could lead to increased sedimentation of streams and length of time to rehabilitate areas with Group D soils. Properly designed recreational activities and implementation of BMPs (Appendix J) are likely to minimize impacts on runoff potential, sedimentation, water quality, and groundwater recharge potential.

The action alternatives vary in their management of routes in certain RMAs. For example, in the Sawmill Mesa and Cactus Park Recreation Management Areas under Alternative B, the BLM would allow for seasonal motorized vehicle use on closed routes to facilitate game retrieval during hunting season. In this instance, Alternative B would provide more time for recreation activities to deposit contaminants capable of degrading soil and water resources.

Within the Gunnison River Recreation Management Area (3,746 acres), all of the action alternatives would provide greater protection to soil and water resources than Alternative A by restricting overnight camping. Alternative B would close the mouth of Dominguez Canyon to overnight camping and would limit the rest of the RMA to designated undeveloped campsites outside of developed campgrounds. In contrast, Alternatives C, D, and the Proposed

Plan Alternative would limit overnight camping to designated campsites outside of developed campgrounds, limiting the protections for soil and water resources.

Alternative D would protect soil resources at Ninemile Hill by closing the area to overnight camping (6,064 acres). The Proposed Plan Alternative would reduce impacts on soil resources by limiting overnight camping to designated, undeveloped campsites. Alternatives A, B, and C propose no similar action and impacts on soil and water resources in this area would continue.

Alternatives C, D, and the Proposed Plan Alternative would reduce impacts on soil and water resources at Cactus Park by limiting overnight camping to designated campsites (34,973 acres in Alternative C, 26,873 acres in Alternative D, and 27,406 acres in the Proposed Plan Alternative). Alternatives A and B propose no similar action and impacts on soil and water resources would continue.

Under all alternatives, motorized and mechanized travel would be restricted to designated routes; however, Alternative A would have the potential for the most dispersed impacts on soils and water, because recreation activities would not be concentrated in SRMAs or ERMAs, where management actions would focus recreation in appropriate areas.

In SRMAs with a trail-based focus, recreation within these areas could result in more intense impacts on soils and water. The non-motorized, non-trail SRMAs designated in Alternative C would be expected to lead to fewer impacts on soils and water. However, this management could lead to the displacement of non-targeted recreationists to other areas of the D-E NCA. This would lead to more dispersed, less intensive impacts related to compaction and loss of soils.

In Alternative D, trail-based SRMAs in Cactus Park, Ninemile Hill and Sawmill Mesa would lead to concentrated recreation use in these areas and corresponding impacts on soils and water quality resources. On the other hand, SRMAs proposed in Alternative D for the Hunting Ground, Gunnison Slopes, Escalante Canyon and Cottonwood Canyon would have little impact on soils and water quality.

In the Proposed Plan Alternative, similar impacts would be expected but over a smaller area (one-third of the acres as in Alternative D).

Lead bullets left behind from recreational target shooting can also impact soil surface health and water quality. Studies have shown that in areas with concentrated target shooting use, soils and nearby surface waters may contain elevated concentrations of lead (Thomas 1997; Chen, Ma, and Harris 2001; Cao et al. 2003). Under Alternative A, nearly the entire D-E NCA would be available for recreational target shooting. In areas where this activity is concentrated, soils and water quality would be impacted as described above if intensity of use is substantial and concentrated. Under Alternative B, recreational target shooting would not be allowed throughout the D-E NCA, preventing the impacts described above (note that restrictions on recreational target shooting do not apply to hunting). Under Alternatives C, D, and the Proposed Plan Alternative, portions of the D-E NCA would be closed to recreational target shooting. In areas where this use is concentrated, impacts would be the same as described for Alternative A. In areas where this use is closed, soils and water quality would be protected from these impacts.

### ***Impacts from Management of Scientific Use***

Science management would conduct monitoring and pilot projects research that would address priority species and vegetation objectives. Science management would also encourage research in the areas that would help the BLM understand natural conditions and cause-and-effect relationships between management actions and resource responses. Knowledge gained would help the BLM more effectively and efficiently manage public lands in the D-E NCA for multiple uses while also promoting healthy ecosystems. A long-term benefit is assumed as a result of scientific undertakings. Alternative B, C, D, and the Proposed Plan Alternative are expected to result in greater understanding of ecosystem processes, including water quality and soil health, which could translate into better soil health management strategies over the long term.

### ***Impacts from Management of Educational Use***

Guided tours, information kiosks and self-guided tours would inform youth and the general public about the D-E NCA natural and cultural resources, and management actions. A more educated and environmentally aware public would better understand mechanisms causing resource damage and the associated consequences (including costs) associated with that resource damage. Alternatives C, D, and the Proposed Plan Alternative generally provide more educational opportunities and are assumed to result in a population that is better educated on factors that affect water quality and soil health than Alternatives A and B.

### ***Impacts from Management of Livestock Grazing***

Livestock grazing is managed in the context of achieving Colorado Standards for Public Land Health and grazing practices can be used that minimize impacts on soils and water quality. If managed improperly, however, livestock grazing can result in removal of effective ground cover (vegetation and litter accumulation), which can elevate potential soil erosion and result in indirect impacts on water quality. Grazing can alter reproductive capabilities in desirable vegetation communities. This effect can increase the potential for the establishment of undesirable species, which may lack soil stabilizing characteristics, over desirable vegetation species. Because of past livestock grazing and other actions, soil resources in the planning area are susceptible to changes in vegetation communities (e.g., pinyon-juniper encroachment, cheatgrass conversion), which can cause increased soil erosion and subsequent water quality degradation.

Grazing animals also can impair water quality by directly depositing manure and urine into surface water; depositing manure and urine near surface water where runoff and leaching can transport these materials into the water; accelerating erosion and sedimentation through hoof action which can cause bank sheering, or overuse of stabilizing vegetation; altering aquatic habitat and stream flow; and reducing the capacity of riparian vegetation to provide shade, filter contaminants, and stabilize stream banks and shorelines. The effects of livestock grazing on water quality can be managed by controlling the timing, intensity, duration, and spatial distribution of grazing (ARS 2012).

Surface disturbance associated with livestock grazing (e.g., hoof action) can be both beneficial and detrimental to soil health. Beneficial impacts can occur when hoof action is used as a management tool to help incorporate seed into soil surfaces. Another example of a beneficial impact is where pocking in the soil surface occurs as a result of hoof action. These features can help trap seeds and moisture essential for establishing desirable vegetation. Pocking features also can increase surface roughness in disturbed areas, slowing runoff timing, increasing infiltration potential, and decreasing runoff volume. The beneficial values of hoof action vary by soil type,



slope, aspect, site potential, and intensity and type of livestock use (active movement—see Glossary—as opposed to extended grazing). Impacts from hoof action are detrimental to soil health when this type of disturbance favors establishment of noxious and invasive species, destroys biologic soil crusts, occurs in combination with overgrazing desirable species, or occurs in previously disturbed areas not suitable for livestock grazing. Destruction of biologic soil crusts reduces soils' surface resistance to erosion, increasing soil loss and sediment transport in these areas, as demonstrated in ongoing research conducted by the U.S. Geological Survey within the Badger Wash Study Area (within the GJFO). These impacts on soil crusts also are documented in Belnap, Prasse, and Harper (2003).

The severity of impact would vary greatly depending on grazing intensity, season of use, climatic conditions, and range site potential. Soil conditions and land health would be evaluated when permits are renewed or allotment management plans are required. Periods of rest in livestock grazing allotments would help elevate effective ground cover and promote higher rates of litter accumulation. Increasing litter and ground cover would reduce erosion from overland flow and allow water to infiltrate more efficiently into soils, improving soil moisture and reducing erosion potential. Increased soil moisture also would help establish and maintain desirable plant species, which also reduces erosion potential and promotes proper function and condition of area watersheds.

Livestock grazing would continue within the planning area under all alternatives. Under Alternative A, zero acres are unavailable for grazing. Grazing could occur in areas not previously grazed, impacting soil resources in areas where soils are currently healthy. Under Alternative B, soils within the 21,589 acres unavailable for grazing would be protected from potential disturbance, vegetation loss, erosion and compaction since Alternative B would exclude livestock, or would limit their use in these areas to active movement only.

Under Alternative C, livestock grazing would be intensively managed to help move toward “very good” condition as defined for priority species and vegetation. Under Alternative C, 918 acres would be unavailable for grazing. AUMs could be reduced if vegetation treatments are insufficient to achieve biological resource objectives. Livestock use would be limited to active movement only in most (but not all) riparian areas.

Under Alternative D, 361 acres would be unavailable for grazing; under the Proposed Plan Alternative, 933 acres would be unavailable for grazing. Under the Proposed Plan Alternative, AUMs and timing of use could be reduced if vegetation treatments were insufficient to achieve biological resource objectives. Alternatives D and the Proposed Plan Alternative would also allow timing of use to be adjusted to help meet recreation objectives. Changing the timing of use of certain areas could help soils through allowing vegetation to reestablish itself and improve soil health between grazing seasons. The most land would be available for livestock grazing in Alternative D.

Construction of stock ponds could result in loss of vegetation, compaction and erosion in the areas around the ponds as livestock gather in these areas that were previously less intensively grazed. However, in other locations, the ponds may draw livestock away from existing natural water features that have vulnerable soils and that livestock currently visit to meet their water needs. Additionally, construction of new water developments may reduce groundwater recharge potential in some areas effectively de-watering surface waters, springs, or seeps. Alternative A allows for the construction of livestock water ponds in the Dominguez Canyon Wilderness, which could reduce water and soil quality. Alternatives C and D call for the construction of up

to 17 new such ponds, with the Proposed Plan Alternative allowing up to 11. No ponds would be constructed under Alternative B.

### ***Impacts from Management of Transportation and Travel***

In general, roads and trails alter and expand drainage patterns, and collect and concentrate runoff, which can accelerate erosion rates above natural conditions. Soil impacts from roads commonly include an increase in the soil bulk density from compaction, loss of vegetation and biological soil crust, and destabilization of physical soil surface crusts and aggregates, all of which can accelerate soil loss from erosion. Overall, surface erosion from roads depends on physical soil factors, road or trail grade and position on the landscape, traffic type and volumes, and the effectiveness of drainage maintenance (Belnap, Prasse, and Harper 2003). Impacts on soil resources also occur adjacent to roads and trails. Concentrated runoff from the roadway can cause accelerated rates of erosion off of the road or trail where that energy is dissipated (Ouren et al. 2007).

Except for the Proposed Plan Alternative, all alternatives propose seasonal closure to protect saturated soils between December and April/May. The same seasonal closure would be in place under the Proposed Plan Alternative but not to directly protect saturated soils. The closure, however, would result in the same benefit to soils. Alternative C contains the most area limited to designated routes with seasonal closure to protect saturated soils between December and April/May, followed by Alternatives B and the Proposed Plan Alternative, and then Alternative D. This would improve soil health and promote water quality protection by limiting activities during times of the year when travel could degrade their conditions. Depending on recreation opportunities elsewhere though, travel may relocate to the remaining areas that are not seasonally closed, thereby increasing impacts on soil and water resources in those areas.

The action alternatives would also close redundant routes, which would limit the degradation of soil and water resources. However, Alternative B would not rehabilitate the redundant routes. Closing routes would benefit water resource by stopping activities from occurring that impact soil and water resources, and rehabilitating routes can improve soil and vegetation conditions that influence water resources. Therefore, the other action alternatives would provide more opportunities for improving environmental conditions affecting water resources.

Under Alternatives A and the Proposed Plan Alternative, 90 or more miles of routes would be designated for horse and foot travel. This would allow continuing impacts on soil and water resources from horse and foot travel disturbances of the ground surface and contaminants associated with human and animal waste, garbage, or horse manure. Under Alternative C, the fewest miles would be designated for horse and foot travel. This would reduce the area where impacts on soils and water resources from horse and foot travel could occur. This benefit would likely not be measurable.

The most acute impacts from transportation and travel management actions would occur in areas near or crossing surface water drainages and locations with sensitive soils, including areas of steep slopes, saline soils, fragile soils, and Mancos Shale. Table 4.30 illustrates perennial and intermittent stream crossings for each road type, by alternative.

**Table 4.30. Perennial and Intermittent Stream Crossings by Route Type and Alternative**

Route Type	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alt
Closed	1	13	55	2	1
Administrative	1	1	1	1	1

Route Type	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alt
Horse and Foot	22	52	10	38	64
ATV	42	0	0	25	0
Full Size	0	0	0	0	0
County	19	19	19	19	19

Variations in impacts across alternatives can be compared by looking at the number of miles of routes located on each soil type. Closing areas and limiting the miles of routes in areas with sensitive soils would protect soils in that area from disturbance and associated compaction and erosion. As a result, alternatives that close more acres or miles of routes to travel would best protect soil conditions (see Tables 4.31 through 4.34: Miles of Routes Overlapping Fragile Soils by Alternative, Miles of Routes Overlapping Steep Slopes by Alternative, Miles of Routes Overlapping Mapped Mancos Shale Areas by Alternative, and Miles of Routes Overlapping Saline Soils by Alternative). For all tables, routes limited to designated uses include those routes with seasonal closures.

**Table 4.31. Miles of Routes Overlapping Fragile Soils by Alternative**

	Alternative A	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<b>Roads and Trails Open to Motorized Use</b>					
Closed	13*	51*	84*	49*	48
Open to Motorized Use on Designated Routes	109*	71*	37*	73*	73
<b>Roads and Trails Limited to Mechanized Use, Foot and Horse</b>					
Closed	13*	47*	84*	45*	47
Limited to Mechanized Use, Foot and Horse on Designated Routes	0	4*	0	4	1
<b>Roads and Trails Limited to Foot and Horse Use</b>					
Closed	1*	32*	53*	27*	30
Limited to Foot and Horse Use on Designated Routes	12*	15*	31*	19*	17
*Numbers recalculated to account for miles consistently between Proposed Plan Alternative and Draft Plan alternatives.					
Source: BLM 2012i					

**Table 4.32. Miles of Routes Overlapping Steep Slopes by Alternative**

	Alternative A	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<b>Roads and Trails Open to Motorized Use</b>					
Closed	7*	12*	13*	11*	11
Open to Motorized Use on Designated Routes	11*	6*	5	7*	7
<b>Roads and Trails Limited to Mechanized Use, Foot and Horse</b>					
Closed	7*	12*	13*	10*	11
Limited to Mechanized Use, Foot and Horse on Designated Routes	0	0	0	1*	0
<b>Roads and Trails Limited to Foot and Horse Use</b>					
Closed	0*	6	7*	3*	3

	Alternative A	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<b>Limited to Foot and Horse Use on Designated Routes</b>	7*	6*	6*	7*	8
<i>*Numbers recalculated to account for miles consistently between Proposed Plan Alternative and Draft Plan alternatives.</i>					
<i>Source: BLM 2012i</i>					

**Table 4.33. Miles of Routes Overlapping Mapped Mancos Shale Areas by Alternative**

	Alternative A	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<b>Roads and Trails Open to Motorized Use</b>					
<b>Closed</b>	0	15*	18*	18*	14
<b>Open to Motorized Use on Designated Routes</b>	25*	9*	6*	7*	10
<b>Roads and Trails Limited to Mechanized Use, Foot and Horse</b>					
<b>Closed</b>	0	13*	18*	11*	13
<b>Limited to Mechanized Use, Foot and Horse on Designated Routes</b>	0	2	0	7	1
<b>Roads and Trails Limited to Foot and Horse Use</b>					
<b>Closed</b>	0	11*	12*	8*	10
<b>Limited to Foot and Horse Use on Designated Routes</b>	0	2*	6*	3*	3
<i>*Numbers recalculated to account for miles consistently between Proposed Plan Alternative and Draft Plan alternatives.</i>					
<i>Source: BLM 2012i</i>					

**Table 4.34. Miles of Routes Overlapping Saline Soils by Alternative**

	Alternative A	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<b>Roads and Trails Open to Motorized Use</b>					
<b>Closed</b>	5*	7*	8*	8*	7
<b>Open to Motorized Use on Designated Routes</b>	4*	2	2	1*	2
<b>Roads and Trails Limited to Mechanized Use, Foot and Horse</b>					
<b>Closed</b>	5*	7*	8*	8*	7
<b>Limited to Mechanized Use, Foot and Horse on Designated Routes</b>	0	0	0	0	0
<b>Roads and Trails Limited to Foot and Horse Use</b>					
<b>Closed</b>	0*	4	5*	3*	3
<b>Limited to Foot and Horse Use on Designated Routes</b>	5*	3*	3*	5*	5
<i>*Numbers recalculated to account for miles consistently between Proposed Plan Alternative and Draft Plan alternatives.</i>					
<i>Source: BLM 2012i</i>					

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

Inspection and maintenance of existing utility lines could include driving maintenance equipment within the ROW. These activities can affect soil erosion, compaction, infiltration, nutrient levels, and can reduce soil productivity and restoration potential. Decreased soil productivity can result in changes to plant habitat types and loss of vegetation growth. Reductions in soil productivity may occur both in the short and long term, depending on the extent of the impact and the measures used to rectify the impacts. These impacts on soils can have subsequent impacts on water resources.

Under Alternative A, ROW exclusion areas would cover 91,327 acres, and the remainder of the D-E NCA would be available for ROW location. The BLM would, however, encourage use of existing corridors or upgrading of existing facilities in sensitive and suitable zones. Alternatives B and C would manage the entire D-E NCA as ROW exclusion (with some exceptions), and Alternatives D and the Proposed Plan Alternative would manage portions of the D-E NCA as either ROW exclusion or ROW avoidance. All alternatives would provide protection to soils by prohibiting utility development and new access roads in these ROW exclusion areas (with some exceptions for non-Federal property and existing ROW facilities). In general, areas managed as ROW exclusion provide greater protection to soils than areas managed for ROW avoidance; areas managed as ROW avoidance provide greater protection to soils than areas available for ROW location.

Under Alternatives B and C, the entire D-E NCA would be managed as ROW exclusion, although exceptions would allow for new ROWs and impacts from these actions would be the same as described above. The use of BMPs and standard mitigation would help mitigate impacts.

Alternatives C, D, and the Proposed Plan Alternative provide for up to one new communication site to be permitted in Delta or Montrose County. Under Alternative B, any new communications facilities must be collocated at the existing communications site in Delta County. The construction of the facilities and any new access roads could cause soils erosion or instability, although impacts could be mitigated through proper site design.

In addition, Alternatives C and D would manage the Unaweep Canyon utility corridor for optic and power lines. The development of new utilities in the corridor could cause effects on soils in the area such as contamination during construction and maintenance activities, and sterilization due to salts that are used in road maintenance during snow conditions.

### ***Impacts from Management of Areas of Critical Environmental Concern***

ACECs protect the integrity of sensitive and unique areas within the D-E NCA through the prohibition or restriction on surface-disturbing activities. Where there are restrictions on surface-disturbing activities to protect ACECs, soils would indirectly benefit. Otherwise, impacts from ACECs on soils and water would be negligible.

Under Alternative A, the BLM would continue to manage the existing ACECs in Escalante Canyon and the Gunnison Gravels. Under Alternative B, all ACEC designations would be dropped and no new designations would be sought. This alternative would provide no indirect protection to soils and water.

Under Alternative C, the Escalante Canyon ACEC would be carried forward from current management and two new ACECs (River Rims ACEC and Big Dominguez Canyon ACEC)

would be designated to promote recovery and delisting of the Colorado hookless cactus. This alternative would provide more indirect protection to soils and water than Alternative A.

Under Alternative D both existing ACECs (Gunnison Gravels and Escalante Canyon) would be carried forward and expanded. Two new ACECs would be designated (Gunnison River ACEC and Gibbler Mountain ACEC) to protect resources in areas where resources warrant special management and recreation is expected to affect those resources. This alternative would provide the most indirect protection to soils and water in terms of total acres of ACECs that would be designated.

Under the Proposed Plan Alternative the Gunnison Gravels and Escalante Canyon ACECs would be carried forward from current management and slightly expanded. Two new ACECs, Gibbler Mountain and River Rims ACECs, would be managed to protect the unique and sensitive rare plants and paleontological resources on the benches and slopes above the Gunnison River. The Proposed Plan Alternative would provide more indirect protection to soils and water than Alternative A since more acres would be designated as ACECs.

### ***Impacts from Management of Wild and Scenic Rivers***

Because the BLM would take no action that would damage the identified ORVs, change the tentative classification of the segment, or impair the free-flowing condition or water quality of the segment, WSR management would provide indirect protections for water and soil resources. For example, along segments classified as “wild” (Big Dominguez Creek Segment 1, Little Dominguez Creek Segment 1, Rose Creek, and Cottonwood Creek), this management would provide an indirect protection to soils and water, because the segment study area would remain relatively unaltered, thereby precluding surface-disturbing activities that could impact soils and water.

Under Alternatives A and C, all eligible and suitable segments would be managed so as not to damage the identified ORVs, change the tentative classification of the segment, or impair the free-flowing condition or water quality of the segment, including the four segments identified as “wild.” Alternatives A and C would therefore provide the most protection to soil and water resources from WSR management.

Under Alternatives B and the Proposed Plan Alternative, the only segment classified as “wild” that would be managed as suitable is Cottonwood Creek, which would provide some level of protection to soil and water resources within the suitable segment corridor.

Under Alternative D, no segments would be found suitable and all would be released from further study. There would be no protection to soil and water resources from WSR management.

### ***Impacts from Management of Wilderness Study Areas***

Impacts from WSA management would not vary across alternatives. However, under Alternatives A, C, D, and the Proposed Plan Alternative, if the WSA is released by congress, managing the area for consistency with adjacent lands would introduce the potential for increased impacts on soil and water resources due to less restrictive management actions. Management under Alternative B would preserve protection of soil and water resources, because the area would be managed to protect wilderness characteristics if the WSA were to be released by Congress (see Impacts from Management of Lands with Wilderness Characteristics).

## Summary of Impacts from Alternatives

In summary, under Alternative A, adverse impacts on soils and water would persist as-is due to the continuation of current management actions. The greatest adverse impacts on soils and water would be from grazing and recreational use. Under the current management alternative, sensitive soil areas would be the least protected from impacts associated with travel management infrastructure as quantified in Tables 4.30 through 4.34. The continuing management of ACECs would help protect soil and water resources and yield beneficial impacts. However, the other alternatives would most likely provide greater protection for soil and water resources due to the implementation of additional limitations on surface disturbance and ROWs, route closures, and BMPs.

The lack of active management under Alternative B would limit damages to soils and water but would also limit rehabilitation actions that could improve conditions. Under Alternative B, the exclusion of livestock grazing from riparian areas along with opening the fewest acres for grazing would allow for greater beneficial impacts on soils and water. The protection of lands with wilderness characteristics would have a beneficial impact on soils and water through the prohibition on non-motorized and non-mechanized travel and surface-disturbing activities in those areas.

Alternative C would provide the most beneficial impacts on soil and water resources due to its ambitious biological objectives and emphasis on restoration using an active management approach. Livestock grazing would be intensively managed to help move toward “very good” conditions as defined for priority species and vegetation and recreation would have little adverse impact on soils and water quality in this alternatives.

Under Alternative D, the most acres would be managed as RMAs and the most acres would be open to livestock grazing, which could adversely impact the largest area of soils and vegetation and, therefore, water resources. Alternative D also contains active management actions for rehabilitating environmental conditions that influence water resources and providing beneficial impacts, although fewer than Alternative C.

The management objectives for biological resources in the Proposed Plan Alternative would be less ambitious than in Alternative C but would likely provide more beneficial impacts on soil and water resources than in Alternative A, because the Proposed Plan Alternative provides a suite of management actions aimed at improving the indicator ratings described in Appendix A. Under the Proposed Plan Alternative, sensitive soil areas would receive more protection from impacts associated with travel management infrastructure, as quantified in Tables 4.31 through 4.34, when compared to Alternatives A and D. However, the Proposed Plan Alternative would provide fewer protections than Alternatives B and C. Route closures would protect sensitive soils from motorized uses on 55 more miles, mechanized uses on 53 more miles, and non-motorized/non-mechanized uses on 45 more miles than Alternative A.

## Cumulative Impacts

The CIAA used to analyze cumulative impacts on water and soil quality includes the entire planning area. Surface-disturbing activities occurring within the planning area are not expected to affect soil resources outside of the planning area. However, surface-disturbing activities occurring within the planning area do have the potential to affect water quality outside of the planning area.

Reasonably foreseeable future actions (Table 4.1) on Federal, State, private, and other lands within the planning area that could have an effect on soil and water resources include vegetation management, livestock grazing, recreation and visitor use, lands and realty, roadway development, water diversions, spread of noxious and invasive weeds, wildfires, spread of forest insects and diseases, drought, and climate change. Without proper mitigation, BMPs, and comprehensive planning, these activities could have similar impacts, as described above.

Combined with the proposed management actions, cumulative impacts on soil resources could present challenges to meeting Public Land Health Standards 1 under Alternative A. Cumulative effects in the planning area are not likely to affect soil health as substantially as under Alternatives B, C, D and the Proposed Plan Alternative because of the required implementation of BMPs protective of soil resources on BLM-administered lands. Alternative C would provide the greatest protection of soil resources, followed by the Proposed Plan Alternative.

Under all alternatives, water resources would receive certain levels of protection due to management in accordance with the Clean Water Act, the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration, and other applicable State and Federal water quality standards. Site-specific mitigation and BMPs for surface-disturbing activities would further reduce impacts on water resources.

Urban growth and development is anticipated to have impacts on water quantity and water quality. The demand for water is anticipated to increase with urban expansion. Water right applications for waters flowing from or through BLM-administered lands are also expected to rise, along with the demand. Additionally, demand and use of water flowing to BLM-administered lands is expected to continue to rise. This includes water used on lands upstream of BLM-administered lands. Impacts on quantity could affect wildlife habitat (e.g., riparian areas and wetlands, aquatic habitat, wildlife, water quality, and fisheries).

Intensive mechanical vegetation treatments likely have and would continue to impact soil and water resources locally, but they would increase vegetation cover, and thus soil health and water quality, over the long term. Past livestock grazing has affected soil and water resources, but, as described in Chapter 3, active management of grazing allotments has led to improvements in soil health over time.

Public Law 98-569 includes direction to the BLM for development of a comprehensive program for minimizing salt contributions from lands under its management. Colorado's Grand Valley is recognized as the largest non-point source of salinity in the Upper Colorado River Basin and much of the lands currently open to all modes of travel are situated in areas mapped to be highly erodible (i.e., fragile) or saline. The cumulative erosion in these areas resulting from a dispersed, expanding, unmaintained, and in many cases poorly designed route system would be considered a nonpoint source of pollution.

Recent drought and potential climate change resulting in more frequent future droughts could decrease vegetative cover, increasing the potential for soil erosion, desertification, and fugitive dust production. This would in turn affect water quality. Furthermore, increased fugitive dust production could elevate the severity of dust-on-snow events triggering earlier melt-out, earlier peak stream flows, and increasing water consumption through transpiration and evaporative processes. As a result, soil moisture in areas reliant on snow melt or flooding would be depleted earlier in the season, thereby stressing vegetation. These additional stresses to vegetation communities could contribute toward vegetation loss and establishment of less desirable species.



### 4.3.3. Cultural Resources

This section discusses effects on cultural resources from proposed management actions of other resources and resource uses under each alternative. Existing conditions concerning cultural resources are described in section 3.2.3, Cultural Resources.

Cultural resources are past and present expressions of human culture and history in the physical environment. The term “cultural resource” can refer to archaeological and architectural sites, structures, or places with important public and scientific uses, and may include locations (e.g., sites, natural features, resource gathering areas or places) of traditional cultural or religious importance to specified social and cultural groups.

The primary goals of cultural resource management are to identify and evaluate these resources, to determine their appropriate uses or management, and to administer them accordingly, both on public lands and on other lands where BLM decisions could affect cultural resources. The objective of cultural resource management has several parts: preserving sites and landscapes, promoting public outreach and education, encouraging professional and academic research, and facilitating Native American traditional uses and consultation with interested groups.

### Methods of Analysis

Cultural resource baseline information in section 3.2.3, Cultural Resources, was reviewed for current understanding of known resources and to determine the condition of the resources. Also, all laws pertinent to determining effects on cultural resources (e.g., NHPA) were considered and included in criteria for determining impacts. This known information was overlain with the actions found under each alternative in Chapter 2, and conclusions were drawn based on an understanding of how these types of actions may affect known and potentially discoverable resources.

### Indicators

Impact indicators are key factors for considering what constitutes adverse and beneficial impacts on cultural resources. Significance criteria set the parameters for severity, specifically when an adverse impact would be significant as defined by NEPA. Under NEPA, adverse impacts on cultural resources are assessed by applying the criteria of adverse effect as defined in the implementing regulations for Section 106 of the NHPA (36 CFR 800). Additionally, assessment of effects involving Native American or other traditional community, cultural, or religious practices, resources, or areas requires focused consultation with the affected group and impact analysis would be informed by said consultation.

Indicators of adverse impacts on cultural resources include the following:

- Extent of ground surface-disturbing activities and their potential for affecting known or unknown cultural resources, or areas of importance to Native American or other traditional communities;
- Increased access to, or activity in, areas where resources are present or anticipated. Vandalism or unauthorized collecting can destroy a cultural resource in a single incident. Public access to areas where cultural resources are present can increase the risk of vandalism or unauthorized collection of materials;

- The extent to which an action changes the potential for erosion or other natural processes that could affect cultural resources. Natural processes, such as erosion or weathering, will degrade the integrity of many types of cultural resources over time. Human visitation, recreation, vehicle use, livestock grazing, fire, trampling, and other activities can increase the rate of deterioration through natural processes.
- The extent to which an action reduces the availability of cultural resources for appropriate uses, including access to spiritual sites or traditional resource gathering areas by Native Americans.

Any of the above indicators would contribute to an adverse effect on a cultural resource if it is listed on, eligible for listing on, or is potentially eligible (i.e., sites that are currently not evaluated, because more data are required before making a determination) for the NRHP, or if it is an area of importance to a Native American Tribe or other traditional community.

For this analysis, adverse impacts on cultural resources would be significant if cultural resources listed on or eligible for listing on the NRHP or allocated to a use category where long-term preservation is an objective were damaged, destroyed, lost or removed from Federal protections. Significant impacts can occur even when appropriate mitigation measures are taken to reduce impacts on cultural resources (such as in the case of excavation).

Indicators of beneficial impacts on cultural resources include the following:

- Measures that withdraw land or restrict surface development for the purpose of resource protection can provide direct and indirect protection of cultural resources from disturbance and from incompatible and unauthorized activities; and
- The extent to which an action preserves or improves the setting (such as visual and audible factors) where relevant to certain cultural resources;

### ***Assumptions***

This analysis includes the following assumptions:

- Impacts on cultural resources are assessed by applying the criteria of adverse effect, as defined in 36 CFR 800.5a: “An adverse effect is found when an action may alter the characteristics of a historic property that qualify it for inclusion in the NRHP in a manner that would diminish the integrity of the property’s location, design, setting, workmanship, feeling, or association. Adverse effects may include reasonably foreseeable effects caused by the action that may occur later in time, be farther removed in distance, or be cumulative.”
- Native Americans or other traditional communities may have concerns about Federal impacts on cultural resources, religious practices or natural resource gathering that may occur because of Federal actions. In cases where these concerns might be present, consultation would occur with the potentially affected group or groups.
- The BLM would follow 36 CFR 800, Section 106 (including Native American consultation), and the Colorado Protocol when addressing Federal undertakings; therefore, adverse effects on cultural resources would be appropriately mitigated.
- Human occupation of North America over the last 10,000+ years has left its mark on all landforms and sites may be manifest on the surface or deeply buried. There may be areas of

importance to contemporary Native Americans that are not readily identifiable outside of those communities.

- The information on cultural resources in the planning area is based on the results of industry and BLM inventory projects and depicts the relative potential for cultural resource sites within the planning area. However, as these data are geographically biased toward past project-oriented undertakings and cannot accurately predict where and how many resources may exist in un-surveyed areas, this analysis does not attempt to quantify affected resources.
- Cultural resource protection and mitigation measures apply to all proposed Federal or federally assisted undertakings and those requiring a Federal permit, license, or approval, and would be applied at project design and implementation phases.
- Cultural resource inventories, either Federal undertakings or related programs, would continue into the foreseeable future and would result in the continued identification of cultural resources. The cultural resource data acquired through these inventories and evaluations would increase overall knowledge and understanding of the distribution of cultural resources in the region.
- Impacts on known cultural resource sites from authorized uses would be mitigated after appropriate Section 106 and Colorado protocol consultation requirements are met. Mitigation can include project cancellation, redesign, avoidance, or data recovery.
- Degradation of known and undiscovered cultural resources from natural processes (e.g., erosion) would continue regardless of avoidance of human caused impacts;
- The number of sites that could be affected by actions correlates with the degree, nature, depth, and quantity of surface-disturbing activities or landscape modifications within the planning area and the cultural sensitivity of the area.
- Potential impacts on cultural resources and their settings from subsequent undertakings (implementation of the planning decisions or site-specific project proposals) require separate compliance with NEPA and Section 106, and result in the continued identification, evaluation, and mitigation of cultural resources to the NRHP. Per the Colorado Protocol and standard BLM operating procedures, effects on cultural resources eligible for listing in the NRHP and potentially eligible cultural resources would be avoided or mitigated. If previously undiscovered resources are identified during an undertaking, work would be suspended while the resource is evaluated and mitigated to avoid any further impact.
- Consultation would continue with Native American groups to identify any traditional cultural properties or resource uses and address impacts. Through this process, effects would be minimized or eliminated, although residual effects and adverse effects as defined by 36 CFR, Part 800 would be possible.

Implementing management actions for the following resources would have negligible or no impact on cultural resources and are therefore not discussed in detail: air quality and watchable wildlife areas.

## **Direct and Indirect Impacts**

Cultural resource compliance actions would continue under all alternatives. New protective measures based on cultural resource use categories and requirements in the legislation to

protect cultural resources are fully considered in all alternatives. Likewise, additional measures addressing protection of Native American resources and traditional uses from adverse impacts are considered under the action alternatives.

Many cultural resources are evaluated only by their surface manifestations and many resources evaluated as not eligible may actually be eligible, but these are lost through project implementation. Adverse impacts, especially on unidentified resources, resulting from ongoing unevaluated or unsupervised activities, natural processes, and unanticipated events such as wildfire, would continue.

### ***Impacts from Management of Geological and Paleontological Resources***

Measures to protect special paleontological localities and outstanding geologic resources include protective designations and restrictions on surface and vehicle use that would provide protections for cultural resources from effects due to surface disturbance, erosion, effects on setting and access leading to vandalism, inadvertent damage, and unauthorized collection of cultural resources. Protective measures may inhibit Native American cultural uses in some areas, such as restricting access to traditional use areas, traditional resources, or sensitive sites. However, should fossil localities be proposed for excavation, any potential effects from the undertaking would be addressed at the project design and implementation phase.

Management under Alternatives A, B, C and the Proposed Plan Alternative would prohibit or restrict the collection of paleontological resources, except where intended for scientific or Native American spiritual or traditional uses. This would provide protections for cultural resources from impacts caused by surface disturbance and accidental collection of cultural resources. Alternative D allows for casual collection of rocks and minerals, recreational collecting of common invertebrate and plant fossils, and allows for restricted collection of vertebrate and trace fossils. As such, the risk of impacts on cultural resources due to surface disturbance and unauthorized collection may be greater under Alternative D than under the other alternatives.

### ***Impacts from Management of Priority Species and Vegetation, Special Status Species and Natural Communities, and Non-Special Status Fish and Wildlife***

Vegetation management measures addressing land health, plant diversity, restoring natural processes, promotion of desired plant communities, maintaining forest health, reducing effects on rangeland during drought, and eliminating weeds would largely be compatible with cultural resource management goals and preservation. Many of the measures would reduce the potential for erosion of cultural sites, maintain and improve soil health, maintain or restore the historic setting, and protect plant resources that may be important to Native American communities. However, mechanical, biological, and chemical treatments could affect cultural resources and could restrict access to resources for cultural purposes during treatment. Ground-disturbing mechanical vegetation treatments could modify the spatial relationships of artifacts and site features and break artifacts. Chemical treatments could alter the chemistry of soils and artifact residues and affect the reliability of dating surface features and affect artifact residue analysis. Use of fire as a treatment could affect flammable cultural resource artifacts and features, cause spalling and staining of rock (either as a surface for rock art or as part of a feature or structure), and distort the temporal and functional analysis of artifacts (Tratebas, Cervený and Dorn 2004; Williams and Corfield 2002; Knapp 2006).

Measures to protect special status species and measures protecting other fish, wildlife, and plants include protective designations and restrictions on surface and vehicle use that would provide

protections for cultural resources from effects due to surface disturbance, erosion, effects on setting and access leading to vandalism, inadvertent damage, and unauthorized collection of cultural resources. Protective measures may inhibit Native American cultural uses in some areas, such as restricting access to traditional use areas, traditional resources, or sensitive sites.

Protection of vegetation communities (which can have special significance in Native American cultures) in Alternatives B through the Proposed Plan Alternative would provide protections to cultural resources.

Alternative B places the most restrictions on vegetation treatments due to the emphasis on natural processes under this alternative. As such, protections, treatments, and rehabilitation of vegetation communities and consequent protections against effects related to surface disturbance, erosion, and inadvertent damage to cultural resources, would be greatest under this alternative. In general, the emphasis on natural processes under this alternative would likely result in more protections on cultural resources, although this emphasis could result in impacts in the event of a natural, unplanned ignition.

Under Alternatives C, D, and the Proposed Plan Alternative, active management of vegetation and habitats would be encouraged. As such, impacts related to surface disturbance would likely be greater than under Alternative B but less than under Alternative A due to additional restrictions on surface disturbance for protection of special status species and fish and wildlife. Additionally, all ignitions would be actively suppressed. Fragile cultural resources, such as wickiups and tipis and tipi rings, are more likely to occur in pinyon-juniper and other forested habitat. These structures are fragile and burn easily. Some alternatives would manage more pinyon-juniper habitat and would consequently have a larger potential to impact such fragile structures. Alternatives C and D do not allow vegetation treatments in old growth or late seral pinyon-juniper woodland and also actively suppress wildfire in these areas, which would act to protect any cultural structures in the area. In pinyon-juniper woodland communities that are not old growth or late seral however, vegetation treatments, including the use of fire, are used to improve plant composition and community structure. Alternative B conversely, relies on natural processes and while it also prohibits vegetation treatments in all pinyon-juniper woodlands, it would not suppress wildfire in the area and would therefore lack the means to protect cultural structures in the event of a fire.

Under the Proposed Plan Alternative, vegetation treatments are avoided in old growth and seral pinyon-juniper woodlands, except in the event of an unplanned wildfire in the Dominguez Canyon Wilderness. In pinyon-juniper woodlands that are not old growth or late seral, vegetation treatments would be the same as under Alternatives C and D. As such impacts on cultural resources due to disturbance caused by vegetation treatments would be more than those under Alternative B. Impacts due to unplanned fire however, would be less than those under Alternative B, as management under the Proposed Plan Alternative provides the ability to act to protect fragile cultural structures in the event of an unplanned ignition.

Continued consultation and cooperation with the State Historic Preservation Office and Native American tribes would allow continued compilation of information on traditional cultural properties, sacred sites, and cultural landscapes allowing better future management and protections of these sensitive areas.

### ***Impacts from Management of Fire and Fuels***

Wildland fire would have the potential to result in direct disturbance or loss of cultural resources through the destruction or modification of structures, features, artifacts, cultural use areas, and

culturally modified trees (Tratebas, Cervený, and Dorn 2004; Greer and Greer 2001; Buenger 2003). Organic materials are especially vulnerable to heat damage. Fire management activities would involve ground-disturbing activities that could also directly affect cultural resources by altering the spatial relationships within archaeological sites. Also, fire retardant chemicals and heat could affect the accuracy of paleobotanical or radiocarbon data obtained from cultural resources. The removal of vegetation increases the visibility of cultural resources and exposes previously undiscovered resources. Sites exposed by fire or prepared for fire avoidance in prescribed burns are more susceptible to unauthorized collection, vandalism, and subsequent erosion. The risk of adverse effects on cultural resources is greatest from unplanned wildfire since the locations of cultural resources are less likely to be known and avoided. Effects from prescribed fire would be similar to those of wildfire, but prescribed fire is an undertaking subject to project-level analysis and the Section 106 process. Some Native American tribal consultants make a distinction between human intervention and ignition (both prescribed and arson) and natural ignition fires.

Under Alternative A, all natural unplanned ignitions would be allowed to burn for multiple objectives (including resource benefit) within 167,772 acres of the D-E NCA.

Alternative B allows the largest amount of acres (208,568) to burn to maximize natural fire effects in the event of a natural unplanned ignition. This is 40,494 acres more than under Alternative A and could result in greater impacts on cultural resources due to fire and heat damage but fewer impacts resulting from fire suppression, such as impacts caused by fire retardant chemicals. Additionally, disturbance of intact desert shrub/saltbush vegetation is prohibited under this alternative. Ignitions would not be suppressed in desert shrub/saltbush vegetation under Alternative B unless they would likely cause substantial long term degradation. This could impact cultural resources as fires could damage culturally significant structures and rock art, could expose a site, or otherwise affect cultural resources.

Under Alternative C, natural unplanned ignitions are also allowed to burn to maximize nature fire effects. Ignitions are allowed to burn within 182,420 acres of the D-E NCA, which is 14,648 acres more than under Alternative A, and 25,846 acres less than under Alternative B. As such, impacts caused by fire would be greater under Alternative C than under Alternative A, and impacts caused by fire suppression would be less under Alternative C than under Alternative A.

Under Alternatives C, D, and the Proposed Plan Alternative, mechanical, chemical, and biological treatments and prescribed fire would be used to meet biological and cultural resource objectives. Mechanical treatments usually result in surface disturbance, which could result in the damage or destruction of cultural resources found on the surface or partially buried. The depth of the buried material and the depth of disturbance from the mechanical treatment would determine the magnitude of the impact (e.g., if the site is very shallow, but the treatment method would disturb the top 10 cm of soil, the magnitude of the impact could be very high). Chemical retardants and treatments could affect the accuracy of paleobotanical or radiocarbon data obtained from cultural resources.

Under Alternative D, natural unplanned ignitions are allowed to burn up to 169,893 acres of the D-E NCA. This is 2,121 acres more than under Alternative A. As such, the extent of impacts on cultural resources would likely be similar to those under Alternative A. Impacts caused by fire suppression would be greater than under the other action alternatives, and impacts related to fire and heat from fire would likely be less than under the other action alternatives.

Under the Proposed Plan Alternative, as under Alternative B, 208,568 acres would be allowed to burn in the event of a natural unplanned ignition. Impacts on cultural resources under the Proposed Plan Alternative would therefore be similar to those under Alternative B.

### ***Impacts from Management of Soils and Water Quality***

Actions to protect watersheds and municipal source waters through surface use restrictions and erosion controls would provide incidental protections from effects due to surface disturbance and erosion. Some water sources and features may be important to Native Americans and actions that protect and maintain these water features and native plant and animal natural resources would help preserve these tribal values and traditional resources. Actions to modify or remove water control structures, develop wells, and modify water features include risks of disturbance of cultural resources and traditional uses and values through ground-disturbing activities, livestock trampling, changes in access, visibility, and setting of water features and changes to the water features themselves.

Soil protection measures would seek to limit erosion resulting from ground-disturbing activities and actions on steep slopes. Many cultural resources are susceptible to erosion damage, including modifying spatial relationships of artifacts and destroying features and stratified deposits. The information loss is relevant to the site function, dates of occupation, subsistence, and past environments; all of these are important to understanding past culture. These measures to protect soils could preserve the integrity of cultural deposits and prevent damage from natural processes.

Alternatives B through the Proposed Plan Alternative would all apply SSR in areas with natural slopes between 25 and 40 percent. In addition, Alternatives D and the Proposed Plan Alternative place SSR within a minimum distance of 30 meters from the edge of the ordinary high-water mark of ephemeral streams. Finally, Alternatives B, C, and the Proposed Plan Alternative all place restrictions on surface-disturbing activities on fragile soils or along stream banks. These restrictions could indirectly protect cultural resources by preventing surface-disturbing activities in sensitive areas, such as along stream banks, whereas those under Alternative A would not.

### ***Impacts from Management of Cultural Resources***

Measures to protect cultural resources include protective designations and restrictions on surface and vehicle use from effects due to surface disturbance, erosion, effects on setting and access leading to vandalism, inadvertent damage, and unauthorized collection of cultural resources. Protective measures may inhibit Native American cultural uses in some areas, such as restricting access to traditional use areas, traditional resources, or sensitive sites. Additionally, protective measures may reduce public interaction with the resources. While this would protect the resource, such measures would not promote public awareness, cultural resource education, or stewardship. Conversely, excavations, educational programs, and on-site interpretation could all lead to greater information about cultural resources and could foster a sense of stewardship in the public through exposure to these resources, but they could damage the cultural resources themselves. For example, excavations have direct, destructive impacts on cultural resources; the very nature of excavation is to remove *in situ* cultural artifacts and destroy intact cultural depositions. The trade off, and mitigation for these effects, is recordation of the information in minute detail for future researchers to see, interpret, and further understand the data collected during excavation. In a similar manner, on-site educational programs and interpretation could encourage vandalism and theft through increased knowledge of resource locations and could lead to fewer protections of cultural resources, but these same programs could also encourage education and stewardship.

Under Alternative B, as well as under all other action alternatives, educational programs about cultural resource ethics would be organized and put on for the public, school groups, vocational archaeology groups, project proponents, permittees, contractors, and others, in compliance with basic Section 106 and Section 110 responsibilities. These programs would encourage participants to report new discoveries and incidents of vandalism. This would impact cultural resources by engendering a sense of stewardship, but it could also lead to impacts from increased exposure of cultural resources to large numbers of visitors.

Overall Alternative C emphasizes the preservation of the site over education more than Alternative B. Under this alternative, measures would be instated to protect and manage cultural resources by holding off-site interpretation, and stabilizing and protecting cultural sites that are becoming degraded through erosion, recreation, or other impacts. Archaeological excavation in certain areas would be limited in order to preserve cultural resources in site. The interpretation of National Register Sites and/or Districts would be prioritized. This alternative would enact measures to protect resources, while also encouraging stewardship through educational programs.

In addition to the educational programs described under Alternative B, Alternative D would also develop heritage tourism sites using BMPs, and would interpret sites (on or off-site). These measures all would contribute to education about cultural resources and to increasing a sense of stewardship. However, this could also lead to increased exposure of cultural resources to large numbers of visitors and subsequent unauthorized vandalism and damage.

Under the Proposed Plan Alternative, interpretation of National Register Sites and/or Districts would be prioritized, and measures would be instated to stabilize and protect sites that are becoming degraded through erosion, recreation, and other impacts. Site interpretation, on or off-site, would also occur. These measures would be less restrictive and protective overall than those under Alternative C, but they would also provide some protections seen under Alternative C that don't appear under the other alternatives, namely, protections to stabilize and protect degraded sites.

Similar actions as those described above for the action alternatives are not proposed under Alternative A, the No Action Alternative.

Cultural resources **could** be allocated into one of six categories according to their nature and relative preservation value. Each category has a corresponding management action and desired outcome. In the Scientific Use category, appropriate research **could** be permitted and the desired outcome **could** be to preserve the resource until research or data **collection could be conducted**. Under the Conservation for Future Use category, protective measures are the corresponding management action, and the desired outcome is to preserve the resource until the conditions for use are met. The management action for cultural resources allocated to the Traditional Use category **could** be tribal consultation and determination of limitations. The desired outcome **could** be long-term preservation. The management action for resources allocated to the Public Use category **could** be to determine permitted use, and the desired outcome **could** be long-term preservation and on-site interpretation. In the Experimental Use category, the corresponding management action **could** be to determine the nature of the experiment and the desired outcome **could** be to protect the resource until it is used. Lastly, for resources placed in the Discharge from Management category allocation, the management action **could** be to remove protective measures and the desired outcome **could** be no use after recordation, and the resource would not be preserved.

The alternatives would manage resources in various categories in different ways. Alternatives B and C would prohibit surface-disturbing activities within 100 meters around sites allocated to



public use, scientific use, conservation use, and experimental use. A buffer of 200 meters for surface-disturbing activities would be required around sites allocated to Traditional Use, resulting in additional protections from surface-disturbing activities resources identified with traditional values ascribed to places and resources by Native Americans or other cultural groups. These actions are more protective of cultural resources than those described for Alternatives D and the Proposed Plan Alternative. For example, under Alternative D and the Proposed Plan Alternative, SSR, rather than prohibiting surface disturbance as under Alternative B and C, would apply within 100 meters of sites (Alternative D) or eligible/potentially eligible sites (the Proposed Plan Alternative) allocated to public use, scientific use, conservation use, and experimental use. For sites allocated to Traditional Use, an SSR would be 200 meters for all alternatives. Using buffers around sites creates a protective barrier that prohibits surface-disturbing activities thereby avoiding damage or destruction of sites, as well as limiting disturbance within the immediate setting around a site. The Proposed Plan Alternative is also limited in application to only those eligible/potentially eligible sites allocated to traditional use.

The concept of managing areas to protect their heritage values at the landscape level is a key management approach in Alternatives B through the Proposed Plan Alternative and is based on ongoing consultation with the Ute Mountain Ute, the Southern Ute, and the Ute Tribes of the Uintah and Ouray Reservation. Heritage areas are not present in Alternative A, and the Cactus Park site mentioned in Alternative A was not brought forward as a heritage area in the action alternatives. Areas identified as heritage areas are not an allocation, but they are defined to orient management toward the concept of these areas being managed as landscapes. Under all action alternatives, 327 acres in Little Dominguez Canyon would be managed as the Rambo/Little Dominguez Canyon Heritage Area. The buffers around and restrictions on access to the Rambo historic homestead location and the other heritage areas would differ by alternative. Alternatives B, C, and the Proposed Plan Alternative would tend to restrict access to heritage areas to day-use only for the purposes of conservation and protection, likely reducing the risk of damage to cultural structures and sites. Alternative D does not restrict access to day-use but does prohibit camping within 100 meters of cultural sites and historical buildings or structures in order to prevent vandalism, theft, and destruction of structures. Although the cultural resource itself might experience fewer protections under this alternative and may be at greater risk for damage, the increase in education that is allowed by greater access could foster a greater sense of stewardship for cultural resources than may be fostered under other alternatives.

Under all alternatives, the Big Dominguez Canyon Heritage Area (1,652 acres) is proposed to be managed to maintain and protect the integrity of setting and place with a focus on prehistoric Rock Art, trails, historic railroad area, biological heritage. Alternatives B, C, and the Proposed Plan Alternative propose making the area Day Use Only, which could reduce the risk of vandalism and theft of artifacts and/or features due to prohibiting overnight stays. Alternative D proposes allowing camping in the area but prohibits camping within 100 meters of cultural sites. Alternative D could also reduce vandalism and theft by restricting camping, however it would likely have a higher risk for damage or destruction to cultural sites as overnight camping could provide the opportunity for visitors to damage sites under cover of darkness and a lesser likelihood for law enforcement patrols. In this case, Alternatives B, C, and the Proposed Plan Alternative would likely be more protective than Alternative D.

Under all alternatives, the High Park Heritage Area (2,034 acres) would be managed to maintain and protect the integrity of setting and preserve the natural landscape characteristics of the area. This area will be used to provide Native American groups with traditional use opportunities. The main differences between Alternative B and C relate to the level of intervention in achieving

the goal for the Heritage Area; specifically, Alternative C promotes more manipulation of the environment although measures such as construction of new routes (versus opening or allowing administrative access) and vegetation regeneration practices (versus promoting natural regeneration). Emphasizing human intervention would likely increase the risk for surface-disturbing activities, which could damage or destroy cultural resources. Alternative D and the Proposed Plan Alternative would be the same as Alternative C; however, they would manage the heritage area according to VRM Class II objective (versus Class I in Alternatives B and C). Managing to a lower VRM Class objective could allow more change in the landscape setting, thereby increasing the risk to the visual integrity of the setting.

Under all alternatives, the Leonards Basin Heritage Area (450 acres) would be managed to maintain and protect the integrity of setting and place with a focus on prehistoric Rock Art, geological and biological heritage. The actions taken under the alternative reflect differences in how best to achieve this objective. Alternatives B and C are the same and emphasize protections within the area by restricting public access to rock art sites and prohibiting overnight camping. In contrast, Alternative D provides the least protections as it would allow more access to cultural sites by focusing the management on education and interpretation of the rock art sites. This would likely attract more attention to these sites and increase the risk for damage to the rock art panels. However, increasing education and interpretation could balance this risk for damage by educating the public to the importance of preserving the area's cultural heritage. Alternative D would also allow overnight camping but limit it to outside a 100-meter buffer around cultural sites; this would likely have the same impacts as those described above for the Big Dominguez Canyon Heritage Area. The Proposed Plan Alternative strikes a compromise by keeping the focus on education and interpretation with the same impacts as those described for Alternative D, but it would limit visitation to day use only, which is the same as under Alternatives B and C, with the same impacts described previously.

All of the heritage areas and any future heritage areas considered after completion of the RMP would provide protections and focus management on preservation of sensitive cultural resources and traditional use areas by restricting access and protecting the settings' integrity.

Reduction of access to certain heritage areas (through the removal of overnight camping and other restrictions) could decrease contact by visitors who could intentionally or accidentally damage resources and sites by collecting surface artifacts, vandalism, or illegally digging into sites.

All action alternatives have measures to fulfill the objective of promoting professional and avocational cultural resource research, preservation, and excavation. Alternatives D and the Proposed Plan Alternative prioritize researching excavation of eligible sites. This could impact cultural resources by increasing knowledge of such resources, positively impacting science and education resources, and by fostering a sense of stewardship. However, excavations are damaging to the cultural resource itself, and in that sense has an adverse impact on cultural resources. Additionally, some tribes support excavations while others do not.

### ***Impacts from Management of Wilderness and Wilderness Study Areas***

Protections afforded by the management measures for the Dominguez Canyon Wilderness and WSA would provide protections for cultural resources. Management measures include surface use and ground disturbance restrictions, prohibitions on motorized uses, VRM Class I management, and other restrictions on incompatible activities. While the Wilderness and WSA designations help preserve and enhance culturally important natural resources, there could be impacts on Native American access due to restrictions that could impede Native American access

to, and uses of, traditional resources and sites. Such restrictions also limit the ability of the BLM to excavate and/or rehabilitate historic properties.

Alternative B emphasizes untrammelled characteristics and opportunities for primitive and unconfined recreation. Accordingly, few treatments or developments would be allowed. While these protections would likely protect and preserve cultural resources, they could also limit the BLM's ability to manage cultural sites. Alternatives C and D would authorize vegetation treatments needed to achieve cultural resource objectives. Under the Proposed Plan Alternative, vegetation treatment would only be conducted under certain resource conditions and then only to meet naturalness objectives of the Wilderness Area. Cultural resources could be damaged but impacts would be restricted to the treatment area. Under Alternatives B, C, and the Proposed Plan Alternative, overnight camping would be closed in Wilderness Zone 1, which would reduce the risk of damage to historical and cultural sites. Under Alternative D, overnight camping would be allowed but prohibited within 100 meters of cultural sites and/or historic buildings. This would reduce the risk of damage to cultural resources, but less so than under Alternatives B, C, and the Proposed Plan Alternative.

Additionally, under all alternatives, measures would be taken to protect supplemental values, which include cultural values. The protection of supplemental values is more proactive under Alternative C than under the other alternatives. Alternatives C, D, and the Proposed Plan Alternative would manage wilderness for opportunities for solitude through actions such as limiting group sizes and requiring permits. In Alternative C, foot and horse travel is limited to designated routes; the Proposed Plan Alternative limits horse travel to existing routes. These restrictions could impact cultural resources by decreasing public access to cultural resources, which could protect resources from vandalism and impacts related to surface-disturbance.

Under Alternatives C, D, and the Proposed Plan Alternative, removing existing human developments not needed to achieve wilderness resource objectives, significant cultural resources excepted, is allowed. This may impact cultural resources not considered significant. These alternatives also would authorize new developments needed to protect or enhance supplemental values.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Protections afforded by the management measures for lands with wilderness characteristics would provide protections for cultural resources. Management measures include surface use and ground disturbance restrictions, prohibitions on motorized uses, VRM classifications, and other restrictions on incompatible activities. Under Alternative B, these beneficial impacts would occur on 21,816 acres. Under the Proposed Plan Alternative, these same beneficial impacts would occur on 13,597 acres. Under Alternatives A, C, and D, there would be no known impacts on cultural resources from management of lands with wilderness characteristics, because the BLM would not introduce protections for those wilderness characteristics.

### ***Impacts from Management of Scenic Values***

The action alternatives vary very little in proposed VRM class allocations, with all action alternatives considering differing levels of VRM Class I and II throughout the planning area. Cultural resources and cultural landscapes can contribute to the visual character and may be considered in determining VRM classifications. VRM Class I and II designations provide protection of cultural resources where visual setting is a contributor to the significance of the property or the traditional use. Effects would be directly and indirectly reduced where

designations limit surface-disturbing activities in the more sensitive VRM class areas. Use of the visual resource contrast rating system during project planning could reduce the effect of visual intrusions on cultural resources. Visual intrusion on the setting of cultural resources must be considered in the Section 106 process and tribal consultation, regardless of VRM designation.

Visual resource management has the potential to impact the natural scenic qualities of cultural landscapes and sites. Under Alternative A, the planning area is divided up into three VRM classifications; areas managed as VRM Class III areas allow for changes to the landscape that may be noticeable, and development may be permitted that would impact the scenic qualities of the cultural landscape. Areas classified as VRM Class I (Dominguez Canyon Wilderness and WSA) would preserve the existing character of the landscape and provide the highest level of protection to sensitive cultural landscapes. Escalante Canyon is managed as VRM Class II, which would retain the existing character of the landscape, and the level of change should be very low. While this classification would limit changes to the landscape, it would still provide protections for cultural landscapes and resources.

Under Alternative B, the planning area is divided up into two VRM classifications, VRM Class I and II with more area in VRM Class II (93,468 acres in VRM Class I and 116,519 acres in VRM Class II). Areas classified as VRM Class I would preserve the existing character of the landscape, which would give the highest level of protection to cultural landscapes. VRM Class II areas would retain the existing character of the landscape and the level of change should be very low. While this classification would limit changes to the landscape, it would still provide protections for cultural resources.

Visual resource management under Alternative C would be nearly the same as Alternative B with only slightly more lands in VRM Class II (71,679 acres in VRM Class I and 138,308 acres in VRM Class II). With this slight change in acreage, there would be a higher chance of sites falling into the VRM Class II area, resulting in possibly more change allowed to modify cultural landscapes.

Under Alternative D, the planning area has more areas in VRM Class I than any other alternative (107,636 acres in VRM Class I and 102,351 acres in VRM Class II). Areas classified as VRM Class I would preserve the existing character of the landscape resulting in the highest level of protection to cultural landscapes.

Visual resource management under the Proposed Plan Alternative splits the difference between Alternatives B and C, with 82,830 acres in VRM Class I and 127,169 acres in VRM Class II. Impacts would be the same as those described previously, yet more acreage would be protected at either classification than under Alternative A.

### ***Impacts from Management of Recreation***

Population growth and the D-E NCA designation may attract more recreational use, which would have the potential for direct, indirect, and cumulative effects on cultural resources from recreation, intentional vandalism or unauthorized collection. Increased use of the internet by interested individuals to disseminate site locations and encourage visitation to sites that are unrecorded or have not been allocated to public use can expose cultural resources to impacts.

Recreation use can affect cultural resources and sensitive Native American resources through direct disturbance, soil compaction, altered surface water drainage, erosion, intrusions to setting, and unauthorized collection or vandalism (Nyaupane, White, and Budruk 2006; Pinter and Kwas 2005). The potential for effects on cultural resources increases when there is an increase in

population, there is a change in recreation use that alters the visual or audible character of the setting, or when recreational use is concentrated in sensitive areas. The effect of repeated uses or visits over time could also increase the intensity of effects due to natural processes. Repeated visits to sites can create social trails, directing more people to sites that may not be recorded or sites that have not been allocated to Public Use. Additionally, increased use of GPS technology contributes to geocaching, which often leads to social trailing. In social trailing, paths off the designated trail are formed over time by repeated use as visitors search for caches or rock art sites. Social trailing could affect cultural resources through surface disturbance, which increases the risk of damaging a cultural site. Additionally, cache placement could endanger cultural sites if visitors place caches in culturally sensitive areas, on historic structures, or in unauthorized locations, encouraging geocachers to stray from the trail. Metal detecting can result in damage to archaeological sites through surface disturbance and also through disturbance of sites with buried features and artifacts. Metal detecting, when used to remove items over 50 years of age, could result in vandalism and unlawful collection to archaeological resources. Increased access to more remote areas can lead to effects on undisturbed resources. Continuing and enhancing interpretation and public education can vest the public in resource protection and respect for Native Americans and cultural values. Travel has different impacts to cultural resources depending on the mode used. Motorized travel could have impacts on cultural resources from surface disturbance and increased erosion (either directly or indirectly) on sites and features. Furthermore, motorized travel can take visitors further onto public lands, which could increase vandalism and unlawful collection over greater distances through increased access. Additionally, the sounds of the motorized recreation could have direct or indirect impacts on sites and resources where aural resources are important to the integrity of the site. Non-motorized travel such as horseback, hiking, and backpacking may create less erosion or sound concerns than motorized travel, but the slower speed of these forms of recreation could increase vandalism to surface sites and unlawful collection of artifacts.

The impacts of recreation activities would vary depending on the level of surface disturbance they would cause and the increased level of access they could enable. Increased access could result in damage to resources through vandalism and unlawful collection, as well as surface disturbance. Some recreation activities, such as kayaking, rafting, and canoeing, would have no impacts on cultural resources. Others, such as horseback riding and ATV use would have an impact and could damage cultural resources through surface-disturbance. Camping would also likely have an impact, as camping locations represent areas of access to water, shade, and comfort and places visitors presently find desirable for camping are often places people have chosen to camp historically and prehistorically. Hiking and backpacking would have a lesser impact, but they may contribute to social trailing, which could damage cultural resources through surface disturbance. In the event that camping prevents cultural objectives from being met, Alternative B would close areas to camping and overnight camping would be limited under Alternatives C and D. Under the Proposed Plan Alternative, the BLM would have the flexibility to close areas to camping and campfires or limit these activities to designated campsites with associated limitation, providing more management options to protect cultural objectives.

Areas designated as ERMAs and SRMAs increase the intensity of permitted use of these areas and the risk for direct, indirect, and inadvertent damage to cultural and Native American resources from camping, visitor use, recreation, vandalism, firewood gathering, and other activities. An increase in human presence can also intrude on settings that may be important for cultural resources or Native American uses. On the other hand, restrictions on surface use to preserve recreational settings may provide incidental protection for cultural resources. In addition, by concentrating use in ERMAs and SRMAs, other adjacent areas may be inadvertently protected.

There are no ERMA's or SRMA's allocated within the D-E NCA planning area in Alternative A. However, recreation use will likely continue to increase due to regional population growth and the D-E NCA's designation. In areas where no RMA is designated and no recreation objectives are identified, recreation will likely be more dispersed and difficult to monitor, as described above. As noted above, increased visitation could result in loss of resources by vandalism and unlawful collecting (looting), and the creation of social trails to cultural sites, areas, or features.

Alternative A would allow geocaching activities and metal detecting, which would result in possible increases in damage to cultural sites, areas, or features, as well as unlawful collection (looting). Also under Alternative A, recreational target shooting and paintball would be allowed throughout the D-E NCA with the exception of three developed recreation sites. Recreational target shooting and paintball can lead to direct and permanent damage to cultural features and resources, particularly when rock art sites are used as backdrops (intentionally or unintentionally) for target shooting. Areas with particularly high concentrations of vulnerable rock art are Wilderness Zone 1 and Escalante Canyon. All of the impacts described above are difficult to mitigate below the level of significance, but they can be greatly reduced by increasing public awareness about the importance of cultural resources through education, community partnerships, and interpretive displays, and by informing the public about penalties for unlawful destruction or unlawful collection of these resources from public lands.

There are no SRMA's allocated within planning area in Alternative B; most of the planning area is allocated to ERMA's. ERMA's under this alternative would facilitate opportunities for canoeing, rafting, mountain biking, motorcycle riding, big-game hunting, camping, kayaking, hiking, horseback riding, picnicking, climbing, motorized trail riding and auto touring. Motorized trail riding, auto touring, and horseback riding would most likely damage cultural resources as they create surface disturbance and erosion of soil. The increased presence of people through better access and more efficient methods for traveling in the D-E NCA increases the risk for vandalism (Eagles, McCool, and Haynes 2002).

Alternative B would prohibit geocaching, metal detecting (unless specifically authorized by the BLM), paintball and target shooting, resulting in elimination of the impacts from these activities as described for Alternative A. However, under Alternative B, management would allow for permanent anchors in climbing areas with routes limited to designated routes. If a climbing area contained cultural resources or features, these could be damaged; however, the impact could be reduced or eliminated with Section 106 and tribal consultation for careful consideration of climbing routes and in anchor placement.

There would be two SRMA's allocated under Alternative C, the Cactus Park/Ninemile Hill and Gunnison River SRMA's; most of the planning area is undesignated. SRMA management would create opportunities for targeted activities like canoeing, kayaking, rafting, camping, and back road touring. The recreation management approach in these two SRMA's is specifically designed to be commensurate with increased protection of cultural resources. Thus, management in these SRMA's would have little impact on cultural resources. However, this management could displace non-targeted recreationists to other areas of the D-E NCA. In areas where no RMA is designated, recreation is more dispersed, leading to the impacts described above.

Under Alternative C, geocaching and metal detecting activities would require BLM authorization, which would allow the BLM to avoid damaging impacts on cultural resources due to theft or vandalism. Paintball would be prohibited under Alternative C, thus eliminating impacts from this activity as described for Alternative A. This alternative would also prohibit target shooting in

some areas (104,999 acres, approximately 50 percent of the D-E NCA), which would eliminate damage from this activity in those areas. However, these closures may concentrate this activity in other parts of the D-E NCA, resulting in impacts within those areas (approximately 50 percent of the D-E NCA) as described under Alternative A. Of the areas within the D-E NCA that have particularly high concentrations of vulnerable rock art, one area would be closed to target shooting (Wilderness Zone 1) and one area would still be available for target shooting (Escalante Canyon). Alternative C would also prohibit the use of permanent anchors on climbing areas, eliminating possible damage to cultural sites and features.

There would be nine SRMAs allocated under Alternative D: the Cactus Park, Ninemile Hill, Escalante Canyon, Hunting Ground, East Creek, Gunnison Slopes, Sawmill Mesa, Cottonwood Canyon, and Gunnison River SRMAs. The remainder of the planning area is undesignated or managed as an ERMA. The trail-based recreation SRMAs in Cactus Park, Ninemile Hill and Sawmill Mesa would likely create more conflict with trying to protect cultural resources than under the other alternatives. These SRMAs would likely result in increased and more concentrated recreation use in these areas.

The heritage tourism recreation management approach in the Escalante Canyon and Hunting Ground SRMAs in Alternative D would lead to increased knowledge and appreciation of cultural resources. However, this management approach could lead to increased vandalism and damage to the resources that are the subject of the heritage tourism (see Impacts from Management of Educational Use). Paintball activities would be prohibited in Escalante Canyon and the Escalante put-in, but would otherwise be permitted in the D-E NCA. This could result in damage to cultural resources similar to that caused by target shooting. The impacts from managing the Upper Sawmill Mesa ERMA would be the same as those described for ERMA management under Alternative B.

Under Alternative D, the BLM would allow for geocaching and metal detecting (same as Alternative A), resulting in the same impacts from these activities as described under Alternative A. This alternative would also prohibit target shooting in some areas (156,942 acres, approximately 75 percent of the D-E NCA), which would eliminate damage from this activity in those areas. However, these closures may concentrate this activity in other parts of the D-E NCA, resulting in impacts within those areas (approximately 25 percent of the D-E NCA) as described under Alternative A. Of the areas within the D-E NCA that have particularly high concentrations of vulnerable rock art (Wilderness Zone 1 and Escalante Canyon), both would be closed to target shooting. Therefore, the closures proposed under Alternative D would reduce impacts on cultural resources from target shooting as compared to Alternatives A or C, although to a lesser extent than Alternative B. This alternative would also allow for permanent anchors and climbing routes the same as Alternative B. Impacts from these actions would be the same as described in Alternative B.

There would be three SRMAs allocated under the Proposed Plan Alternative: the Cactus Park, Escalante Canyon, and Gunnison River SRMAs. The remainder of the planning area would be managed as an ERMA or managed for dispersed recreation. The trail-based recreation SRMA in Cactus Park would likely create more conflict with trying to protect cultural resources; however fewer trail-based SRMAs are allocated under this alternative than under Alternative D. Other targeted recreation activities that could result in impacts on cultural resources include equestrian activities in the Ninemile Hill ERMA, and dispersed camping.

Physical geocaches would only be allowed outside of the Wilderness and would require BLM authorization prior to placement; impacts would be the same as Alternative C in this area. Inside

the Wilderness, only virtual (i.e., earth caches), would be allowed, there would be a lower potential for associated impacts on cultural resources in the wilderness area. As under Alternatives B and C, metal detecting would require BLM authorization, which would protect cultural resources from possible vandalism or theft. Paintball would be prohibited, thus eliminating impacts from this activity. This alternative would also prohibit target shooting in some specific areas (9,995 acres, approximately 5 percent of the D-E NCA), which would eliminate damage from this activity in those specific areas. It is unlikely that these limited closures would concentrate this activity in other parts of the D-E NCA. Of the areas within the D-E NCA that have particularly high concentrations of vulnerable rock art (Wilderness Zone 1 and Escalante Canyon), both would be closed to target shooting. Therefore, the closures proposed under the Proposed Plan Alternative would reduce impacts on cultural resources from target shooting, although to a lesser extent than Alternative B. The Proposed Plan Alternative would have the same management actions for climbing areas as Alternative B; therefore, impacts would be the same.

### ***Impacts from Management of Scientific Use and Educational Use***

Measures for interpretation, environmental education, use of cultural resources as heritage tourism sites or interpretive sites, and promotion of NHTs may enhance appreciation and understanding of the fragile and finite nature of cultural resources; however, it can also lead to effects from access, degradation from use, vandalism, and unauthorized collection. Archaeological investigations that include excavation provide increased scientific knowledge, but they do not preserve the resources *in situ* for future study. While increased stewardship can result from greater education about cultural resources, vandalism can also result as greater education is often enabled through greater access. Therefore, resources that are not suitable for public uses are not allocated to that use category and are not included in interpretation or education projects.

Alternative B emphasizes education the least, and therefore is least likely to have impacts on cultural resources caused by increased visitor traffic and access. However, when educational opportunities are limited, this negatively impacts science. Alternative D, conversely, manages three heritage areas, an ACEC and watchable wildlife area, and an RMA as education emphasis areas for natural geological, paleontological and cultural resources. This alternative most heavily emphasizes education and is likely to have the most impacts on cultural resources caused by increased visitor traffic and access. However, the greatest impacts for education are likely to occur under this alternative, and increased education and outreach can foster a sense of stewardship among visitors toward cultural resources.

### ***Impacts from Management of Livestock Grazing***

In areas open to grazing, livestock grazing is associated with ongoing effects on or near the ground surface. Improper grazing and associated trampling reduces vegetation cover and disturbs the soil, which accelerates erosion and weathering. The modification, displacement, and loss of artifacts, features, and middens results in loss of valuable cultural resource information regarding site function, date of use, subsistence, past environments, and other research questions. Trampling and grazing can also affect Native American use areas and culturally important plants. Effects on cultural resources occur more frequently where livestock concentrate such as permanent and intermittent water sources. The construction or maintenance of range improvements such as springs, reservoirs, fences, corrals, and livestock trails have the potential to affect cultural resources, especially if these areas have not been previously inventoried. File searches are conducted at the time of permit renewal with a recommendation for inventories and site evaluations in areas with a high potential for cultural resources where livestock congregate, and



if conflicts exist, mitigation measures are proposed. Range improvements are an undertaking subject to project-level analysis and Section 106 process and protections and mitigations would be applied at project design and implementation phases. In all alternatives, cultural resources in areas closed to livestock grazing are directly protected.

Actions under all alternatives to protect springs and wetland riparian areas from livestock grazing would help protect water features and sources that may be culturally important to tribes. Actions that improve rangeland health could reduce the potential for effects from direct disturbance, erosion, and wildfire.

Alternative A would continue to make 204,921 acres available for livestock grazing; functionally, an additional 5,056 acres of unallotted but unfenced area would continue to be grazed. Impacts would likely be of the nature and type described above. Areas only available for active movement (see Glossary) activities (8,141 acres) would experience fewer impacts, as the cattle would not linger in riparian areas or in rock shelters so would be less likely to have an impact on sites along the rivers or rock art panels.

Alternative B proposes to make 188,389 acres available for livestock grazing. Impacts would likely be of the nature and type described above over the available areas, but they would occur over a smaller area than in Alternative A. Under Alternative B, areas unavailable to livestock grazing (16,588 acres) would provide the greatest protection by eliminating any livestock related impacts and constitute a more protective alternative than Alternative A. Approximately 37 percent more acres would be only available for active movement, but this activity would have similar impacts as described in Alternative A.

Alternative C proposes to make 209,059 acres available for livestock grazing. Impacts would likely be of the nature and type described above over the available areas, but they would occur over a larger area than in Alternatives A and B. Areas closed to livestock grazing (918 acres) would have the same impacts as described above but provide less protection than in Alternative B due to the very small amount of area closed. As no areas are closed in Alternative A, Alternative C would be only slightly more protective of cultural resources than Alternative A. Areas only available for active management activities would have the same impacts as described in Alternative A, although the area limited to active movement only is approximately twice as large.

Alternative D proposes to make 209,617 acres available for livestock grazing. Impacts would likely be of the nature and type described above over the available areas, but they would occur over a larger area than in Alternatives A, B, or C. Impacts from areas closed to livestock grazing would be the same as under Alternative B but on a much smaller area (361 acres). Areas only available for active movement activities would have the same impacts as described in Alternative A, although fewer acres would be limited to this type of use.

The Proposed Plan Alternative proposes only slightly more area available for livestock grazing (206,127 acres) than Alternative C; therefore, impacts would be essentially the same as those described in Alternative C. Areas unavailable for livestock grazing (933 acres, including both allotted and unallotted areas) would have the same impacts as described above, but provide less protection than those in Alternative B due to the very small amount of area unavailable. As no areas are unavailable in Alternative A, the Proposed Plan Alternative would be only slightly more protective of cultural resources than Alternative A. Areas only available for active movement activities would have the same impacts as described in Alternative A, but would be applied to an area approximately twice the size.

### ***Impacts from Management of Transportation and Travel<sup>1</sup>***

Restricting vehicle use to designated trails reduces the risk of disturbing cultural resources located off trails and helps protect the integrity and setting of sensitive Native American resources from effects of degrading the integrity and setting of sensitive cultural resources, disturbing cultural sites, and looting or vandalism of sites (whether intentional or unintentional). The closure of areas to multiple methods of travel provides the greatest protection for cultural resources as long as administrative access is maintained to permit Native American access for identified cultural uses.

Direct effects are identified through inventory, and adverse effects addressed through avoidance by redesign or mitigation of roads and trails. Ongoing indirect effects on cultural resources from use of designated trails are less likely to be detected or monitored and enforcing restrictions is difficult. Unauthorized travel would probably continue, and the potential risk of unauthorized collection or vandalism due to creation of unauthorized access would likely continue. Motorized travel could have impacts on cultural resources from surface disturbance and the potential to increase erosion (either directly or indirectly) on sites and features. Motorized travel can also take visitors further onto public lands, which could increase vandalism and unlawful collection over greater distances through increased access. The sounds of motorized recreation could have direct or indirect impacts on sites and resources where sound is important to the integrity of the site. Non-motorized travel such as horseback and hiking and backpacking may create less erosion or sound concerns than motorized travel, but the slower speed of these forms of recreation could increase vandalism of surface sites and unlawful collection of artifacts. Equestrian impacts are also high, as horseback riding can damage cultural resources through surface disturbance.

Under Alternative A, approximately 69,263 acres<sup>2</sup> would be closed to motorized use, whether year-round or seasonally; closure of these areas could result in protection for cultural resources and reducing impacts such as those described above. The remaining 140,400 acres would be allocated as limited to designated routes for motorized travel and would continue to have similar impacts on those described above. Public travel would be allowed on 716 miles<sup>2</sup>, including 626 miles<sup>2</sup> designated for different types of motorized vehicles and mechanized use and 90 miles<sup>2</sup> designated for foot and horse travel. The types of impacts resulting from the route designations would be the same as described above.

For travel management and transportation, Alternative B would result in the same type of impacts as Alternative A; however, this alternative would close 135,400 acres (acreage total includes 91,000 acres of year-round closure and 44,400 acres of seasonal closure. See Chapter 2) to motorized public use, an increase of 61,500 acres from Alternative A. This would protect approximately 80 percent more area and the sites within the closed areas from motorized use impacts. The remaining 118,600 acres (this number includes the 44,400 acres of seasonal road closure areas) would be allocated as limited to designated routes for motorized travel and would continue to have similar impacts as noted above. Under Alternative B, public travel would be allowed on 386 miles<sup>2</sup>, including 329 miles<sup>2</sup> designated for different types of motorized vehicles, 339 miles<sup>2</sup> where mechanized use would be allowed, and 47 miles<sup>2</sup> designated solely for foot and horse travel. Because this alternative allows public use on fewer miles than under Alternative A, it is likely to have less impact on cultural resources due to decreased public access and surface disturbance.

<sup>1</sup> Acres and miles for Draft alternatives were updated in order to account for them consistently between the Proposed Plan Alternative and the Draft alternatives and ensure a representative comparison.

<sup>2</sup> Updated number

Alternative C would have the same type of travel management impacts as Alternative A; however, this alternative would have 127,300 acres (Acreage total includes 66,193 acres<sup>2</sup> of year-round closure and 61,000 acres of seasonal closure. See Chapter 2.) closed to motorized public use, an increase of 53,400 acres from Alternative A. This would protect approximately 72 percent more area and a larger likelihood for resource protection from motorized use impacts. The remaining 143,300 acres (This number includes the 61,000 acres of seasonal road closure areas.) would be allocated as limited to designated routes for motorized travel and would continue to have the types of impacts described above. Public travel would be allowed on 244 miles<sup>2</sup>, including 186 miles<sup>2</sup> designated for motorized use, 209 miles<sup>2</sup> where mechanized use would be allowed, and 35<sup>2</sup> designated for horse travel. In general, Alternative C allows motorized use on the least amount of miles of all the alternatives, and the least amount of impacts due to surface disturbance and vandalism caused by increased access due to motorized travel can be expected.

Implementing travel and transportation management actions under Alternative D would result in the same type of impacts as Alternative A; however, this alternative would have 129,500 acres (Acreage total includes 66,300 acres of year-round closure and 63,200 acres of seasonal closure. See Chapter 2.) closed to motorized public use, an increase of 55,600 acres from Alternative A. This would protect approximately 75 percent more area and a larger likelihood for resource protection from motorized use impacts. The remaining 143,300 acres (This number includes the 63,200 acres of seasonal road closure areas.) would be allocated as limited to designated routes for motorized travel and would continue to have the same impacts as described above. Public travel would be allowed on 463 miles<sup>2</sup>, including 329 miles<sup>2</sup> designated for different types of motorized vehicles, 397 miles<sup>2</sup> where mechanized use would be allowed, and 66 miles<sup>2</sup> designated solely for foot and horse travel. As such, impacts from all types of travel under this alternative would be less than under Alternative A.

Implementing travel and transportation management acreage allocations under the Proposed Plan Alternative would result in the same type of impacts as Alternative C. However, under the Proposed Plan Alternative, public travel would be allowed on 551 miles of routes, including 407 miles designated for different types of motorized vehicles, 419 miles where mechanized travel would be allowed, and 112 miles designated solely for foot and/or horse travel. Although the Proposed Plan Alternative would allow public use on the most miles of travel of any action alternative, access would be allowed on 165 fewer miles than under Alternative A, resulting in fewer impacts than under Alternative A.

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

All alternatives include provisions to retain and acquire lands that contain significant cultural resources and culturally sensitive areas, to maintain access to resources, to reduce incompatible uses, and, under applicable alternatives, to minimize disturbance when authorizing ROWs. The potential acquisition of new land would provide long-term Federal consideration under the NHPA to any cultural resources included in the transaction and could enhance currently managed resources by consolidating holdings and potentially protecting the setting of cultural resources. Land tenure adjustments and new transportation facilities that allow for better access to public lands could facilitate cultural uses but could also lead to vandalism or unauthorized collection of cultural resources. Exchange or disposal of lands to non-Federal entities would permanently remove Federal protections for any significant cultural resources present, which would be an adverse effect under the NHPA. Exchanges, disposal, and subsequent landscape changes could also result in effects on the setting of cultural resources.

The development and operation of transportation systems, transmission lines, communication sites, renewable energy resources, and other land use authorizations can disturb large tracts of land containing many cultural resources and affect the setting of cultural resources over a great distance. Defining exclusion and avoidance areas for ROWs and other realty actions reduces the potential for effects on cultural resources resulting from discretionary actions at those locations. Siting ROWs along existing corridors does not reduce the potential for effects on cultural resources.

Under Alternative A, 91,327 acres would continue to be unsuitable for public utilities, specifically in the Gunnison River Corridor, Cactus Park, and Dominguez Canyon. Any cultural resources in these areas would be protected from possible surface-disturbing activities resulting from land use authorizations. However, there would continue to be two utility corridors—the West-wide Energy corridor (1 to 5 miles wide) and Unaweep Canyon (0.5-mile wide)—that could accommodate land use authorizations and experience surface-disturbing activities. Any cultural resources in these areas could have impacts of the type described at the beginning of this subsection. However, prior to any permit/authorization being granted, the BLM would work to mitigate adverse impacts on cultural resources through the Section 106 and tribal consultation process.

Under Alternative B, the entire D-E NCA would be a ROW exclusion area, which would protect cultural resources from land use authorization surface-disturbing activities.

Under Alternative C, the existing Unaweep Canyon utility corridor (0.5-mile wide) would remain designated and would accommodate land use authorizations. Should an authorization be granted, there could be surface-disturbing activities that could affect cultural resources; this would result in the same impacts described above.

Under Alternative D, managing 118,784 acres as a ROW avoidance area would provide some protection for cultural resources but would increase the potential for effects on cultural resources relative to the remainder of the decision area, which would be managed as a ROW exclusion area.

Under the Proposed Plan Alternative, 1,022 acres along Highways 50 and 141 would be managed as ROW avoidance areas with stipulations and mitigation measures (which could indirectly protect any cultural resources within the buffer). The Proposed Plan Alternative would be more restrictive than Alternative C but less restrictive than Alternative B.

### ***Impacts from Management of Areas of Critical Environmental Concern, National Trails and BLM Backcountry Byways, and Wild and Scenic Rivers***

Protections afforded by the management measures for these special designations would provide additional, indirect protections for cultural resources. Management measures include surface use and ground disturbance restrictions, prohibitions on motorized or mechanized uses, VRM classifications, and other restrictions on incompatible activities. Designation may help preserve and enhance culturally important natural resources, but in some instances restrictions could impede Native American access and uses. Designations may attract more recreational use and the potential for inadvertent effects on cultural resources from recreation or intentional vandalism or unauthorized collection. Increased use of the internet by interested individuals to disseminate site location and encourage visitation to sites that are unrecorded or have not been allocated to public use can expose cultural resources to impacts.

Where cultural resources are identified as an ORV for WSR segments, there would be additional protections for these resources when the segment is managed as eligible or suitable for inclusion

in the NWSRS. Under Alternatives A (eligible) and C (suitable), the applicable WSR segments include Gunnison River Segments 1 and 3, Big Dominguez Creek Segments 1 and 2, and Little Dominguez Creek Segments 1 and 2. In addition, Alternative B would manage the Gunnison River Segments 1 and 3 as suitable. Under Alternatives D and the Proposed Plan Alternative, no segments with cultural ORVs would be managed as suitable or eligible, thereby forgoing protections from WSR management.

Under Alternative A, Gunnison Gravels and Escalante Canyon would be designated as ACECs, with protections such as prohibiting surface-disturbing activities, and excluding the areas from utility ROWs. These measures would protect any cultural resources within the ACEC.

Under Alternative B, the Gunnison Gravels ACEC would not be designated, but it would still receive the additional protections noted in Alternative A, due to D-E NCA protections. Other actions that make up this alternative provide similar protections (e.g., ROW exclusion area), all of these measures would protect any cultural resources within the ACEC.

Under Alternative C, the River Rims area would be designated an ACEC to protect unique and sensitive paleontological resources; as noted above, protection of other sensitive resources generally has a protective effect on cultural resources.

Alternative D would designate the Gunnison Gravels ACEC; impacts would be the same as Alternative A. The alternative would also provide protections to outstanding geologic resources in the Escalante Canyon area, which would indirectly provide protections for cultural resources if there are any in the Escalante Canyon area. The alternative would also designate the Gibbler Mountain ACEC and Gunnison River ACEC, both of which would protect unique and sensitive resources through specific prohibitions on surface-disturbing activities. As noted above, these protections provide indirect protection to cultural resources.

Under the Proposed Plan Alternative, four ACECs (Escalante Canyon, Gibbler Mountain, Gunnison Gravels, and River Rims) would be managed to protect relevant and important values. Impacts from managing the Escalante Canyon, Gibbler Mountain, and Gunnison Gravel ACECs would be the same as described under Alternative D, but over a smaller area. Impacts from managing the River Rims ACEC would be the same as described under Alternative C.

## Summary of Impacts from Alternatives

Under Alternative A, protections of cultural resources and some vegetation communities (which can have special significance in Native American cultures) would provide protections to sensitive cultural sites from adverse impacts. Continued consultation and cooperation with the State Historic Preservation Office and Native American tribes would allow continued compilation of information on cultural properties and cultural landscapes allowing better future management and protections of these sensitive areas. Trends in the area indicate that recreational use in the area could lead to increases in the types of impacts as discussed under the *Impacts from Management of Recreation* section above; however, Alternative A would lack focused recreation management, leading to increased adverse impacts on tribal resources. Alternative A does not propose focusing recreation management resulting in a greater risk for cultural resource damage due to fewer protective measures such as limiting access, providing educational opportunities, and limiting overnight camping. There would also continue to be many routes open to public use, which would result in adverse impacts in the form of continued vandalism to cultural sites. Also, the

lack of prohibitions and limitations on surface-disturbing activities would continue to result in adverse impacts on cultural resources.

Alternative B emphasizes natural processes and favors management actions that restrict allowable uses, limit public access, and rely on natural processes. These are actions that often inadvertently provide protections for cultural resources from adverse impacts. However, the lack of active management under Alternative B also could limit the BLM's ability to proactively protect cultural resources from adverse impacts, particularly in situations where they are endangered by fire.

Overall, Alternative C would use active management for cultural resources in order to protect them from vandalism and other adverse impacts. However, many of the protections that would be used under Alternative C would also limit public access and exposure to cultural resources. While this would preserve the resources, the trade-off would be that the public would have less exposure to the resources. Although allowing greater access to cultural resources does present a risk of adverse impacts on the resources themselves, it also enables a sense of stewardship to emerge in the public that could result in beneficial impacts on cultural resources through greater public understanding and care.

Alternative D emphasizes recreation. This emphasis could lead to adverse impacts on cultural resources due to increased public access to the D-E NCA and a wide range of allowable uses. In general, this alternative has fewer protective measures for cultural resources than the other alternatives.

The Proposed Plan Alternative combines aspects of the other alternatives, and although it is similar to Alternative D in its focus on recreation objectives, and in many cases, takes the middle ground between Alternatives D and B, it has many similarities to Alternative C as well in its management actions that would impact cultural resources. Although the Proposed Plan Alternative is not as ambitious as Alternative C as far as active cultural resource management, it would passively protect cultural resources from adverse impacts through protective measures, similarly to Alternative B.

## **Cumulative Impacts**

The types of effects on cultural resources that have occurred in the past include destruction of cultural resources, loss of integrity due to physical or other disturbances, loss of setting, degradation from natural processes such as erosion and weathering, incremental disturbance from use or access, and effects from vandalism and unauthorized collection.

Current and future trends in the D-E NCA include ongoing grazing, increase in recreational demand, invasive species, erosion, wildfire, forest disease and insects, drought, and climate change. These would continue to affect cultural resources and cultural landscapes through loss or disturbance of resources that are not or cannot be protected, changes in setting, pressure from incremental use, loss of access for Native Americans to resources, and theft or vandalism of cultural resources.

Cultural resources adjacent to areas of growth and development would be most susceptible to future effects. Development near public lands, such as on private or State lands along the D-E NCA boundary, increases the risk of effects on cultural resources. The effects on cultural resources on adjacent private lands would be greater than on Federal lands since they would not be subject to the same requirements or protections. The construction of buildings, roads, and associated structures increases ground disturbance, causing effects on cultural resources and their

settings. In general, the more people and development in an area, the greater the potential for disturbance and increased cumulative effects. Enforcement of measures designed to protect cultural resources and the natural resources and places used by Native Americans would become more difficult as use increased. Areas where intensive, cross-country motorized use is allowed would continue to expose cultural resources to effects. Designating routes can protect cultural resources located off the routes, but restrictions are difficult to enforce, especially as population and recreational use grows and other areas are closed. Increased use of GPS (geocaching) and off-highway vehicles can facilitate vandalism and unauthorized collecting. Increased use of the internet to disseminate site location and encourage visitation to sites that are unrecorded or have not been allocated to public use would continue to expose cultural resources to impacts.

Actions related to recreation, grazing, vegetation treatment, and wildfire, have had past effects and are expected to continue to affect cultural resources. Increased frequency of wildfire due to drought or climate change may lead to additional direct loss of cultural resources and effects.

A Class I synthetic overview for the planning area was completed in 2013. However, many cultural resources are evaluated only by their surface manifestations and many resources evaluated as not eligible may actually be eligible, but these are lost through project implementation. Agency actions using Federal funds or needing a Federal permit require cultural resource review, but some effects would be unavoidable. Measures are in place to identify threats to resources and to prioritize management actions, but some effects on known or unknown cultural resources resulting from activities such as natural processes, wildfire, grazing, dispersed recreation, recreational use, and vandalism can go unnoticed and may not be mitigated. Mitigation could preclude other desirable management options and future uses. Development or actions on lands that are not protected by Federal or other cultural resource statutes and regulatory protections could lead to loss of these resources and the regional heritage and knowledge that they contain.

Decisions from this RMP would have effects that, when combined with other past, present, and reasonably foreseeable actions, could produce cumulative effects on cultural resources. Cumulative effects would result from the destruction and loss of known and unrecorded resources and unanticipated discoveries. The continued documentation of new cultural resources from undertakings and permitted actions that would require inventory for compliance would result in additional information to expand and explain the area's cultural history. Proactive planning measures required as part of the D-E NCA designation and under any of the alternatives would improve current management of cultural resources in the decision area. Adherence to appropriate pre-development, development, and post-development protective measures would reduce most effects.

#### **4.3.4. Wilderness**

This section discusses impacts on the Dominguez Canyon Wilderness from proposed management actions of other resources and resource uses. Existing conditions concerning the Wilderness are described in section 3.2.4, Wilderness. The size of the Dominguez Canyon Wilderness would be the same under all alternatives. Wilderness designation is a congressional action; no new wilderness areas would be established under any alternative.

## Methods of Analysis

The Dominguez Canyon Wilderness is a nationally valuable resource and would be managed in accordance with the Wilderness Act under all alternatives.

### *Indicators*

Indicators of impacts on the Dominguez Canyon Wilderness include the following:

- Potential changes in wilderness characteristics (untrammelled, natural, undeveloped outstanding opportunities for solitude or primitive and unconfined recreation; and unique or supplemental values) within the Dominguez Canyon Wilderness. These characteristics are defined using the Keeping It Wild Interagency Wilderness Monitoring Protocol (Landres et al. 2008):
  - Untrammelled: Number of authorized actions and persistent structures designed to manipulate plants, animals, pathogens, soil, water, or fire; percent of natural fire starts that are manipulated within the boundaries of the Wilderness; number of unauthorized actions by agencies, citizen groups, or individuals that manipulate plants, animals, pathogens, soil, water, or fire.
  - Natural: Status of native biological communities (defined by priority habitat indicators and standards); abundance and distribution of non-indigenous species; AUMs of livestock use inside wilderness.
  - Undeveloped: Index of physical development for authorized or pre-designation structures and developments (e.g., buildings, fences, and livestock water developments); existing or potential impact of inholdings; type and amount of administrative use of motor vehicles.
  - Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation: Level of visitor use; area of wilderness affected by travel routes; type and number of agency provided and user-created recreation facilities; type and extent of management restrictions.
  - Unique and Supplemental Values: Severity of disturbances to cultural resources; status of indigenous species that are listed, or are candidates for listing, as threatened or endangered.

Adverse impacts for this section would result from any actions that diminish any of the wilderness characteristics described above. Beneficial impacts, on the other hand, would result from any actions that maintain or enhance the wilderness characteristics described above. Trade-offs between wilderness characteristics are bound to occur. Therefore, one action may have an adverse impact on one wilderness characteristic and a beneficial impact on another wilderness characteristic.

### *Assumptions*

The analysis includes the following assumptions:

- The Dominguez Canyon Wilderness would continue to be managed according to the Wilderness Act of 1964, the Omnibus Public Land Management Act of 2009, Appendix A of the Committee on Interior and Insular Affairs of the House of Representatives accompanying H.R. 2570 of the 101st Congress (commonly called the Congressional Wilderness Grazing Guidelines), BLM Manual 6340– Management of Designated Wilderness Areas (BLM 2012d), and subsequent wilderness legislation.



- Established grazing in the Wilderness is determined by the active AUMs permitted at the time of wilderness designation for any allotment that is wholly or partly within the Wilderness. Maintenance of existing facilities and construction of new facilities necessary to manage and utilize permitted AUMs would be conducted in accordance with the Congressional Grazing Guidelines.
- Because livestock grazing levels at the time of wilderness designation were in accordance with BLM grazing regulations and future grazing would conform to BLM grazing regulations, existing permitted AUM levels would not impact naturalness. However, livestock developments and authorized motorized use by permittees impact the undeveloped nature of the Wilderness; livestock grazing operations can impact outstanding opportunities for primitive recreation, as visitors may have to camp in the presence of livestock or in areas with evidence of livestock (e.g., manure); and livestock grazing operations can impact solitude by increasing the potential of encounters between wilderness visitors and grazing permittees during authorized grazing dates.
- Management of the Wilderness is subject to valid existing rights and special provisions identified in the Wilderness Act under all alternatives.
- Implementation-level activities within the Wilderness would be evaluated using the Minimum Requirement Decision Guide (Appendix I) to determine how the activity would impact the wilderness characteristics. Because there are inherent trade-offs associated with management of wilderness characteristics (e.g., actions that may protect and enhance cultural supplemental values, such as a barrier around a rock art site, may diminish the undeveloped nature of the Wilderness), actions may enhance wilderness characteristics or may be detrimental to wilderness characteristics.

Implementing management actions for the following resources would have negligible or no impact on the Dominguez Canyon Wilderness and are therefore not discussed in detail: Geological and Paleontological Resources, fire and fuels, science, education, land tenure and land use authorizations, national trails, and watchable wildlife areas.

## **Direct and Indirect Impacts**

Wilderness characteristics are primarily influenced by the volume and density of recreational users and range of biological resource management projects, which typically come from vegetation treatments and the installation, maintenance, and use of range/wildlife improvements allowed under the Wilderness Act and Congressional Wilderness Grazing Guidelines. There could be indirect beneficial impacts from management of other resources that would enhance wilderness characteristics; however, such impacts are generally negligible, as protections are not as strict as those afforded to the Wilderness per the Wilderness Act.

Protection of wilderness character (the combination of all the wilderness characteristics) often involves trade-offs between the individual characteristics. For example, protecting or enhancing a biological community may require a vegetation treatment. In this case, impacts on the wilderness characteristic of naturalness would be beneficial, but the vegetation treatment would adversely impact the untrammeled characteristic. The duration of effects may also vary. For example, a trade-off of short-term trammeling could result in long-term beneficial impacts on naturalness; in this case, “short term” would be defined as the duration it takes to spray weeds (approximately a week, for example).

Each action alternative identifies a management emphasis for one or more of the wilderness characteristics for the entire wilderness or for different zones within the Wilderness. Because protection of one wilderness characteristic often involves a trade-off mentioned above, the direct and indirect impacts are primarily influenced by the management emphasis of each alternative.

Table 4.35, Summary of Acreage Impacts on Wilderness, provides a summary of the impacts of various management actions by alternative on the Dominguez Canyon Wilderness.

**Table 4.35. Summary of Acreage Impacts on Wilderness**

Management Action	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alternative
Subject to Prohibited Surface Disturbance (PSD) Restriction	0	32,053	26,861	22,885	19,059
Subject to Timing Limitation (TL) <sup>1</sup> Restriction	0	17,567	17,567	1,104	11,223
Subject to Site-Specific Relocation (SSR) Restriction	0	8,484	24,976	15,659	32,745
Cultural Resource Heritage Areas	0	1,884	1,884	1,884	1,884
Open to Livestock Grazing	59,714	59,122	59,122	63,139	59,251
ACECs	0	0	5,232	8,175	243
Eligible/Suitable WSR Segments	10,916	162	11,047	0	0
<sup>1</sup> The entire D-E NCA is closed to all surface-disturbing activities from May 15 to July 31; this is not reflected in the acres of areas closed by the TL above.					
Source: BLM 2012i					

***Impacts from Management of Priority Species and Vegetation, Special Status Species and Natural Communities, Non-Special Status Fish and Wildlife, Noxious and Invasive Weeds, and Soils and Water Quality***

Where the Dominguez Canyon Wilderness overlaps priority species and vegetation, management actions to protect priority species and vegetation types would enhance naturalness (e.g., Colorado hookless cactus, a federally threatened species) and unique and supplemental values (e.g., other threatened and endangered species). It would accomplish this by promoting a more natural landscape conducive to healthy vegetation, fish, and wildlife. All biological resources have the inherent trade-off of potential development (e.g., monitoring devices such as stream gauges) and trammeling (e.g., vegetation treatment and fire management) to improve naturalness.

Management for priority species and vegetation would not apply under Alternative A, so any indirect enhancement of naturalness and unique and supplemental values would not occur. Alternative B would result in naturalness conditions that are similar to current conditions (Alternative A), because priority vegetation management would use a natural processes (untrammeling) approach. Active management of priority vegetation communities in Alternatives C, D, and the Proposed Plan Alternative would maintain or enhance naturalness based on the desired future condition of the indicators described for priority vegetation. Because Alternative C has the highest standard for desired future conditions (either “very good” or “good”), naturalness has the potential to improve the most under this alternative, followed by the Proposed Plan Alternative, then Alternative D.

Restrictions on surface-disturbing activities to protect special status species, fish and wildlife, and soils and water quality could incidentally help protect wilderness character by enhancing naturalness and unique and supplemental values. Differences between alternatives are summarized in Table 4.35, Summary of Acreage Impacts on Wilderness.

Spraying noxious and invasive weeds would result in short-term trammeling during the time that spraying occurs (approximately one week) and long-term protection or improvement of naturalness. Not spraying weeds, while not trammeling, would diminish long-term naturalness because of more weed infestations. Alternatives A and B would treat the least weed species, including State A-listed species and selected BLM species of concern. Alternatives C and the Proposed Plan Alternative would treat the most weed species, including all State species and selected BLM species of concern. Alternative D would treat the second-least number of weed species, including State A- and B-listed species and selected BLM species of concern.

### ***Impacts from Management of Cultural Resources***

Types of indirect impacts from cultural resources restrictions would be similar to those described under Impacts from Management of Special Status Species and Natural Communities, above. For example, restrictions on surface use to protect cultural resources would limit habitat degradation, thereby protecting the wilderness characteristic of naturalness. There could also be direct, long-term impacts if a barrier, which is a development that would impact the undeveloped characteristic, were needed to protect a cultural resource, as the barrier would also diminish a visitor's outstanding opportunity for unconfined recreation.

In Alternatives B, C, D, and the Proposed Plan Alternative, wilderness characteristics of untrammelled, natural, undeveloped, and unique and supplemental values would indirectly be protected due to the protective measures applied to 1,884 acres of heritage areas that overlap the eastern part of the Dominguez Canyon Wilderness. These include the entire Rambo/Little Dominguez Canyon Heritage Area, the entire Leonard's Basin Heritage Area, and the majority of the Big Dominguez Canyon Heritage Area. There would be no similar indirect protections or impacts under Alternative A. However, protective measures for the heritage areas would impact unconfined recreation due to the no-camping restriction under Alternatives B, C, and the Proposed Plan Alternative.

### ***Impacts from Management of Wilderness***

Managing the Dominguez Canyon Wilderness to protect wilderness characteristics would protect wilderness values through application of the Minimum Requirements Decision Guide (Appendix I) for implementation activities. Because the BLM cannot and would not permit any actions that impair the overall wilderness character of the area, such impacts would only occur from activities associated with valid existing rights or special provisions. Motorized use for the Rambo life lease is the only valid existing right allowed in the Wilderness, and livestock grazing is the only special provision allowed (see Impacts from Management of Livestock Grazing, below).

Under all alternatives, impacts on the undeveloped nature of the Wilderness would be affected throughout the lease on the Rambo homestead. Throughout the lease on the Rambo homestead, the undeveloped nature of the Wilderness would be affected through the use of motor vehicles to access the homestead and any allowable maintenance or construction at the homestead site.

Vegetation treatments, whether to restore ecological function, reduce hazardous fuels, improve habitat, or reduce invasive species, would be conducted using the Minimum Requirements

Decision Guide (Appendix I), and direct impacts would likely be localized and short term. Solitude experienced by recreational users could be reduced in the shorter term while the treatment is implemented. Over the long term, naturalness would remain unchanged or enhanced; the magnitude of this restoration would depend on the type and scope of vegetation restoration. All impacts would be localized, and over the long term, naturalness would be enhanced by restoring natural vegetation structures and patterns.

Naturalness is measured by the Priority Species and Vegetation community indicators. Monitoring devices would be necessary to measure the indicators. Monitoring devices are described as installations and are therefore specifically prohibited by the Wilderness Act. Any use of monitoring devices would require review and analysis to ensure the use of such devices meets the minimum requirements for the administration of the area for the purpose of the Wilderness Act. Allowing monitoring devices in the Wilderness to meet naturalness and supplemental value objectives under Alternatives C and D would impact the undeveloped nature but would allow for protection or improvement of naturalness. Under the Proposed Plan Alternative, authorizing the minimum number of installations necessary to monitor the Priority Species and Vegetation community indicators and opportunities for solitude or unconfined recreation would have similar effects. Impacts under Alternative B would be reduced, because fewer installations would occur.

Actions to remove non-native competitors would impact the untrammeled Wilderness characteristic. Impacts would be similar across Alternatives A, B, C, and D. Under the Proposed Plan Alternative, on-the-ground active management would be limited to instances where Priority Species and Vegetation community indicators and vegetation attributes are determined to be in fair or poor condition, and only when weed treatments would improve those indicators or attributes. Additionally, in these instances, use restrictions would be included as part of any active management strategy to improve or prevent further degradation of the Priority Species and Vegetation community indicators. Use restrictions would diminish a visitor's outstanding opportunity for unconfined recreation.

Because all management actions, not only those associated with non-native species, would be restricted, the Proposed Plan Alternative would best protect the untrammeled characteristic. Because treatments under the Proposed Plan Alternative would be limited, short-term trampling impacts and potentially long-term protection or improvement of naturalness would be the least under the Proposed Plan Alternative.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Lands managed to protect wilderness characteristics, where next to the Dominguez Canyon Wilderness, could create additional protection for the Wilderness, as the management for the areas would be similar. A wider expanse of contiguous land containing the Wilderness and lands managed to protect wilderness characteristics could therefore heighten protection within the Wilderness and further ensure the integrity of wilderness characteristics. Alternative B would manage lands to protect all areas found to contain wilderness characteristics (totaling 21,816 acres). Where the Dominguez Addition Unit is adjacent to the south-central portion of the Wilderness, additional protection of the Wilderness could result. There would be no similar protections under Alternatives A, C, D, or the Proposed Plan Alternative. Under the Proposed Plan Alternative, the BLM would protect wilderness characteristics on 13,597 acres. However, because these acres do not border the Wilderness, there would be no known impacts on the Wilderness from the protection of these 13,597 acres.

Management actions to restrict allowable wilderness uses (livestock grazing and recreation) as part of any management response where monitoring indicates that use is contributing to “fair” or “poor” conditions in biological resources, combined with management actions to limit vegetation treatments, including post-fire rehabilitation to areas where monitoring indicates conditions are either “fair” or “poor,” would protect the untrammelled nature of the Wilderness. Generally, management responses to biological conditions would be to let natural processes take place until monitoring shows indicators have degraded to “fair” or “poor” condition.

### ***Impacts from Management of Scenic Values***

The management of the Dominguez Canyon Wilderness according to VRM Class I objectives would contribute to the protection of the wilderness characteristics of untrammelled and undeveloped by preserving the existing character of the landscape. Impacts would be the same under all alternatives.

### ***Impacts from Management of Air Resources***

Reducing noise in the D-E NCA under Alternative C would protect the perception of solitude, maintaining or restoring the natural quiet of the Dominguez Canyon Wilderness. There would be no similar impacts under Alternatives A, B, D, or the Proposed Plan Alternative.

### ***Impacts from Management of Recreation***

Visitors could have outstanding opportunities for solitude or primitive and unconfined recreation when the sights, sounds, and evidence of other people are rare or infrequent, and where visitors can be isolated and alone or secluded from others. High concentrations of recreation users (large group sizes or frequent group encounters) would decrease outstanding opportunities for solitude in wilderness. Maintaining or reducing the current group size and applying visitor use limits for use in the Dominguez Canyon would have varying degrees of preserving opportunities for solitude. Where group size limitations would be implemented for visitors to the Dominguez Canyon Wilderness, opportunities for unconfined recreation would be reduced and opportunities for solitude increased. Visitor use restrictions on recreational activities that generate substantial human-caused noise (e.g., recreational target shooting) would increase outstanding opportunities for solitude.

In general, Alternatives A and B would be the least restrictive of visitor use, Alternatives D and the Proposed Plan Alternative would implement some visitor use restrictions (e.g., group size limits), and Alternative C would implement the most restrictions on visitor use. Alternative B would provide outstanding opportunities for primitive and unconfined recreation without applying restrictions that limit visitor use; Alternative D Wilderness Zone 3 (28,784 acres) would have the same effects. Alternative C would provide the most outstanding opportunities for solitude throughout the Wilderness by limiting visitor use to the smaller average group size (6 or fewer, not including pets and stock animals) and average number of contacts (4 or fewer); Alternative D Wilderness Zone 2 (35,823 acres) would have similar effects. Alternative D Wilderness Zone 1 (1,586 acres) would support and protect supplemental values by limiting visitor use to a larger average group size (12 or fewer, not including pets and stock animals); the Proposed Plan Alternative Wilderness Zone 1 (1,586 acres) would have the same effects but to a much less restrictive extent. This is because of its average group size of 25 people or fewer, not including pets and stock animals, which would decrease outstanding opportunities for solitude. The other notable different between alternatives would be that the Proposed Plan Alternative Wilderness

Zone 3 (28,784 acres) would limit visitor use to a group size of 12 or fewer, not including pets and stock animals, whereas Alternative D Zone 3 would not limit group size.

Permanent anchors are considered installations and are therefore specifically prohibited by the Wilderness Act. Any authorization for installing permanent climbing anchors would require review and analysis to ensure the use of such devices meets the minimum requirements for the administration of the area for the purpose of the Wilderness Act. Allowing permanent rock-climbing equipment in the Wilderness under Alternatives A and D would impact its undeveloped nature. Conversely, prohibiting drilling or use of permanent equipment under Alternatives B and C would protect its undeveloped nature. Under the Proposed Plan Alternative, requiring a permit for placing and maintaining permanent climbing anchors inside the Wilderness would likely reduce the frequency of permanent equipment. This would reduce impacts on the undeveloped nature from current conditions.

Under Alternatives B, C, and the Proposed Plan Alternative, prohibiting overnight camping in Wilderness Zone 1 (1,586 acres) would diminish opportunities for unconfined recreation, while protecting supplemental values (cultural resources). The Wilderness Zone includes a portion of the Big Dominguez Canyon Heritage Area, all of the Rambo/Little Dominguez Canyon Heritage Area, and the Wilderness portion of the Leonards Basin Heritage Area. Under the Proposed Plan Alternative, limiting overnight camping to designated campsites in the Gunnison River corridor would diminish opportunities for unconfined recreation, while protecting naturalness by protecting riparian values. There would be no such effects under Alternatives A, B, C, or D.

Requiring overnight visitors to pack out solid human waste in the whole Wilderness in Alternative C or in Wilderness Zone 2 of the Big Dominguez Canyon in the Proposed Plan Alternative would diminish opportunities for unconfined recreation. Requiring overnight visitors to bury solid human waste in a cathole more than 100 meters (328 feet) from a natural water source in Alternative D and Wilderness Zone 3 in the Proposed Plan Alternative would impact such opportunities to a lesser degree. These requirements would protect naturalness by protecting riparian values and public health. There would be no similar effects under Alternatives A or B.

Where recreation or visitor use is contributing to the damage of unique or supplemental values, the minimum tool necessary would be used to protect that value. In some cases, this could impact the untrammelled or undeveloped characteristics of the Wilderness. The potential for impacts on unique and supplemental values would be the greatest under Alternative A where recreation management is the least restrictive.

Recreational target shooting would be allowed throughout the Wilderness under Alternative A, which could result in adverse impacts on outstanding opportunities for solitude. Along with the sounds associated with target shooting there is often litter (spent shells and targets). Both represent sights and sounds of other visitors which impact outstanding opportunities for solitude. Target shooting can also result in impacts on naturalness (see discussion in section 4.3.2.2, Special Status Species and Natural Communities) and unique and supplemental values (see discussion in section 4.3.3, Cultural Resources). This activity would be prohibited throughout the D-E NCA (including the Wilderness) under Alternative B (note that restrictions on recreational target shooting do not apply to hunting), thus eliminating this impact on wilderness values. Under Alternatives C and D, recreational target shooting would be allowed within certain areas within the D-E NCA but prohibited within the Wilderness. These closures would also eliminate impacts from this activity on wilderness values. Under the Proposed Plan Alternative, Wilderness Zone 1 would be closed to recreational target shooting, which would eliminate impacts on wilderness

values within this area. This activity would still be allowed in Wilderness Zones 2 and 3, and impacts on wilderness values from this activity could occur.

### ***Impacts from Management of Livestock Grazing***

Livestock grazing would continue within the Wilderness (to varying extents) under all alternatives. As stated in the assumptions, livestock grazing occurred at the time that the Wilderness was designated; as such, continuation of established grazing under BLM grazing regulations is not considered an impact on the wilderness characteristics. Existing range improvements used for grazing, such as fences, stock trails, springs, and stock ponds, are allowed as a special provision under the Wilderness Act and Congressional Wilderness Grazing Guidelines and would continue to be maintained. Maintenance of range improvements could result in short-term impacts on solitude. The undeveloped nature of the Wilderness would also be affected by the allowable motorized use for livestock grazing operations and construction of any new facilities necessary to manage and utilize the permitted AUMs that existed at the time the Wilderness was designated.

Changes in grazing may be allowed in number, kind, or season of use following the preparation of an EA (if not adequately addressed in an existing NEPA document). Per the Congressional Wilderness Grazing Guidelines, livestock numbers may be increased only if so doing has no adverse impact on wilderness values, both biophysical and social.

Under Alternatives B, C, and D, 557 acres along Rose Creek would be closed to livestock grazing. Closing these areas to livestock grazing would protect the undeveloped nature by preventing new fences and motorized use by the permittee, would protect solitude by preventing encounters with the livestock permittee, and would protect primitive recreation by preventing camping in the presence of livestock. Although these areas would be open to livestock grazing under Alternative A and the Proposed Plan Alternative, because the rugged terrain makes the area inaccessible by livestock, the effects would be functionally the same as under Alternatives B, C, and D.

Alternative D would make an additional 3,314 acres in Little Dominguez Canyon available for livestock grazing; that allotment is currently restricted to livestock active movement between grazing units only in Alternative A, and would remain so under Alternatives B, C, and the Proposed Plan Alternative. Opening Little Dominguez Canyon to grazing would impact the undeveloped nature (e.g., potential new fences and motorized use by the permittee), solitude (e.g., encounters with the livestock permittee during authorized grazing dates), and primitive recreation (e.g., camping with livestock).

The impacts from constructing new livestock facilities would affect the following wilderness characteristics: naturalness, the undeveloped nature, the untrammeled nature, and opportunities for solitude. The severity of the impact would depend on the number, type and distribution of the new developments. Any new livestock water development would require site-specific analysis with the appropriate NEPA analysis and would be in accordance with the Wilderness Act and with the congressional grazing guidelines as identified in the Omnibus Act. The congressional grazing guidelines require that any new developments enhance wilderness.

New facilities would have positive and negative impacts on naturalness. Creating artificial water sources in areas where water does not occur naturally could cause localized changes to wildlife populations and migration patterns. Additional impacts on naturalness would result from the increased regularity of livestock use in areas with new water developments. Specifically, in areas where monitoring of biological resources indicates land health problems are associated with livestock grazing, these areas could improve as a result of construction of new water

developments, with improved livestock distribution. For example, naturalness would improve along on the McCarty Bench within the Dominguez Allotment from new water facilities to improve livestock distribution.

Localized impacts on wildlife would be mitigated through design features of new facilities that would control the availability of captured water for wildlife use. New management objectives and strategies for biological resources would also mitigate negative impacts on naturalness. More ambitious expectations for improvement of priority vegetation communities would ensure any new areas of livestock use would be managed in a way that protects naturalness.

New facilities would impact the undeveloped nature of the Wilderness by introducing new structures where structures did not exist at the time of designation. Additionally, the undeveloped nature would be impacted by new motorized use that would be authorized for maintenance of the new facilities. The impact from motorized use for facility maintenance would be long-term (i.e., impacts would occur through the life of any new water development). That said, the duration of each motorized use would be short (the time necessary to complete any maintenance), and the frequency would be low (any new water developments would be designed to require minimal maintenance). As mentioned above, wilderness management often involves trade-offs between characteristics. The impacts on the undeveloped nature would be a trade-off that would improve and protect naturalness, as noted above.

The untrammelled nature of the Wilderness would likely be impacted by any management action, including active livestock management (e.g., salting and moving livestock to utilize forage), new water development construction, and weed management (if noxious and invasive weed infestations occurred as a result of the disturbance created by construction activities). The BLM would treat noxious and invasive weeds to protect the naturalness of vegetation communities. Impacts are described under Impacts from Management of Priority Species and Vegetation, Special Status Species and Natural Communities, Non-Special Status Fish and Wildlife, Noxious and Invasive Weeds, Soils and Water Quality, and Impacts from Wilderness, above. These impacts would be short term and would not persist.

Opportunities for solitude would be impacted by new water developments if visitors were to encounter the sights and sounds of human activity associated with construction, maintenance or monitoring of the facilities. A visitor could see the facility, see grazing permittees or BLM personnel monitoring or maintaining the facility, or hear motorized equipment or vehicles that would be authorized to maintain the facilities. These impacts would be mitigated by requiring placement and construction of the new facilities to meet VRM Class I objectives and structuring a motorized use agreement with the grazing permittee that reduces the chance a visitor might encounter them (e.g., limiting their motorized use to weekdays). Additionally, impacts on solitude would be mitigated by season of use. Visitation to the Wilderness is primarily during the spring and fall. If livestock use occurred during the winter or summer months, the chances a visitor would encounter livestock or permittees doing water development maintenance would be reduced.

As noted above, the severity and extent of the impacts would depend on the number, type and distribution of the developments. Under Alternative A seven ponds would be constructed. Under Alternative C and D, up to 17 water developments (ponds and/or catchments) would be constructed. Under the Proposed Plan Alternative, up to 11 water developments (ponds and/or catchments) could be constructed. Under Alternative B, no water developments would be constructed.



Constructing seven earthen livestock water ponds under Alternative A would result in the least number of developments, except for Alternative B. That said, pond placement is dependent on topography. There would be less opportunity to place pond locations to reduce visual impacts. Additionally, there would be more ground disturbance associated with construction, which would result in a higher probability of weed infestation and need for weed treatments. Grazing management using ponds often requires fencing as a tool to distribute livestock to areas around different ponds. Construction of ponds could require construction of additional fencing inside the Wilderness to ensure desired livestock distribution.

Constructing up to 17 water development (ponds and/or catchments) under Alternatives C and D would have the most impact due to the largest number of installations. That said, under these alternatives, there would be an option of constructing catchments. Catchments would allow more flexibility for placement and potentially reduce the visual impact. Additionally, catchments could be designed to reduce the amount of disturbance during construction, which could reduce the amount of weed infestation. Water stored in a catchment can be released only when needed for livestock, and not release other times of the year. This would reduce impacts on naturalness by not creating a new water source for wildlife in areas where water does not currently exist. Since water supply from catchments could be controlled, fences would not be required to ensure proper distribution. Distribution could be controlled by which catchment had water available, thus eliminating the need for additional fences. Catchments would require more maintenance and management by the permittee. This would result in more opportunities for to encounter the permittee inside the Wilderness.

The types of impacts of constructing up to 11 water developments (pond and/or catchments) under the Proposed Plan Alternative would be similar to those under Alternatives C and D. Because the number of developments would be less, the magnitude of the impacts would be less under the Proposed Plan Alternative.

### ***Impacts from Management of Transportation and Travel***

In all alternatives, the Dominguez Canyon Wilderness would continue to be closed to motorized use (administrative motorized use would be permitted) and mechanized use, as required by the Wilderness Act, which would continue to protect wilderness characteristics by restricting activities that could impact natural and untrammeled appearance and outstanding opportunities for solitude and primitive/unconfined recreation. In accordance with Wilderness Act Section 4(d) (special provisions), exceptions to prohibitions on motorized and mechanized vehicles could result in a short-term detractor from the undeveloped character of the area. In addition, there is a potential for a short-term elimination of solitude and undeveloped character from increased sights and sounds associated with the use of equipment and mechanical transport. These impacts would be uncommon and short term in nature if they do occur. On a more-regular basis, motorized and mechanized use for the special provision of established livestock grazing would impact opportunities for solitude and the undeveloped character.

In Wilderness Zone 1 (1,586 acres), Alternative C would limit foot and horse travel to designated routes, and the Proposed Plan Alternative would limit only horse travel to existing routes. Both of these actions would protect wilderness characteristics by restricting activities that could impact naturalness (e.g., Colorado hookless cactus, a federally threatened species) and unique and supplemental values (e.g., cultural sites and other threatened and endangered species). However, limiting foot and horse travel to designated or existing routes would also impact unconfined recreation. Under the Proposed Plan Alternative, Wilderness Zone 1 would be open

to cross-country foot travel. This could affect naturalness and unique and supplemental values. Foot and horse travel would not be limited in Alternatives A, B, or D, or in any of the other wilderness zones in any alternative.

Identifying a wilderness trail system to inform visitors about available opportunities for primitive types of recreation under Alternative B and under Alternatives D and the Proposed Plan Alternative in Wilderness Zone 3 would enhance those opportunities. Identifying a trail system to enhance visitor opportunities for solitude under Alternative C would enhance those opportunities. Under Alternatives D and the Proposed Plan Alternative Wilderness Zone 1, constructing new or rerouting designated routes to protect cultural resources would protect wilderness characteristics by restricting activities that could impact naturalness and unique and supplemental values (cultural resources). Table 4.36, Miles of Routes Open within Wilderness by Alternative, shows the miles of routes open for public and administrative use by alternative. Having more routes available under Alternatives A, D, and the Proposed Plan Alternative could spread out visitors, thereby enhancing opportunities for solitude. However, closing more routes, as under Alternatives B and C, could reduce trammel and enhance naturalness and undeveloped characteristics.

**Table 4.36. Miles of Routes Open within Wilderness by Alternative**

	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alternative
<b>Open to Public Use (Miles)</b>	110	35	35	74	68
<b>Administrative Use Only (Miles)</b>	1	16	16	5	<1

*Source: BLM 2012i*

### ***Impacts from Management of Areas of Critical Environmental Concern***

Where the Dominguez Canyon Wilderness overlaps or is next to ACECs, ACEC management could indirectly protect wilderness characteristics due to the complementary protective management measures proposed for the ACECs. As shown in Table 4.35, Summary of Acreage Impacts on Wilderness, 5,232 acres of ACECs overlap the Wilderness in Alternative C, thereby potentially indirectly protecting wilderness characteristics. Alternative D could indirectly protect 8,175 acres of the Wilderness, and the Proposed Plan Alternative could protect 243 acres. There would be no similar protections in Alternatives A or B.

### ***Impacts from Management of Wild and Scenic Rivers***

Where the Dominguez Canyon Wilderness overlaps or is adjacent to WSRs, management of these rivers could indirectly protect wilderness characteristics due to the protective measures proposed for the rivers. These protective measures would include complementary management objectives to the Wilderness. As shown in Table 4.35, Summary of Acreage Impacts on Wilderness, 11,047 acres of stream segments within the Wilderness would be managed to maintain their eligibility for inclusion in the NWSRS in Alternative A, thereby potentially indirectly protecting wilderness characteristics. Alternative C the same acres within the Wilderness as suitable, and Alternative B has 162 acres. No streams within the Wilderness would be managed as suitable in Alternatives D or the Proposed Plan Alternative, so there would be no indirect protections of wilderness character.

### ***Impacts from Management of Wilderness Study Areas***

The Dominguez Canyon WSA could create additional protection for the Wilderness, as the management for the areas would be similar. A wider expanse of contiguous land containing the

Wilderness and WSA could therefore heighten protection within the Wilderness and further ensure the integrity of wilderness characteristics. Several portions of the perimeter of the Wilderness border the WSA. Impacts would be the same under all alternatives.

## **Summary of Impacts from Alternatives**

A summary of impacts by alternative is provided in Table 4.37, Impacts on Wilderness Characteristics within the Dominguez Canyon Wilderness by Alternative.

## **Cumulative Impacts**

Increasing visitation and recreation continue to have the potential to impact wilderness character. Under all alternatives, the Dominguez Canyon Wilderness would continue to be managed under The Wilderness Act. Because of this, there are no present or future actions, or combination of actions, likely to have significant cumulative effects on wilderness character, and the cumulative effects of all alternatives would be the same.

**Table 4.37. Impacts on Wilderness Characteristics within the Dominguez Canyon Wilderness by Alternative**

Wilderness Characteristic	Alternative A	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<b>Untrammeled</b>	<p>Untrammeled character would remain relatively stable.</p> <p>Up to 7 water ponds for livestock could be developed; the fewest of any alternative but with the greatest potential for adverse impacts, because there would not be an option to build catchments.</p> <p>Spraying noxious and invasive weeds, wildfire minimum impact suppression tactics, and conducting post-fire rehabilitation, could result in short-term adverse impacts. Alternatives A and B would treat the least weed species.</p>	<p>This alternative would result in beneficial impacts on untrammeled character.</p> <p>Similar to Alternative A, plus:</p> <p>The 1,884 acres of heritage areas would indirectly protect the untrammeled character.</p> <p>No livestock ponds or catchments could be developed.</p>	<p>Untrammeled character would remain relatively stable.</p> <p>Up to 17 water ponds or catchments for livestock could be developed; the most of any alternative but with reduced potential for adverse impacts, because catchments would result in fewer adverse impacts than ponds.</p> <p>Alternatives C and the Proposed Plan Alternative would treat the most weed species, resulting in adverse impacts on untrammeled character.</p> <p>The 1,884 acres of heritage areas would indirectly protect the untrammeled character.</p>	<p>This alternative would result in minor beneficial impacts on untrammeled character.</p> <p>Up to 17 water ponds or catchments for livestock could be developed; the most of any alternative but with reduced potential for adverse impacts, because catchments would result in fewer adverse impacts than ponds.</p> <p>Alternative D would treat the second-least number of weed species.</p> <p>The 1,884 acres of heritage areas would indirectly protect the untrammeled character.</p>	<p>This alternative would result in the most beneficial impacts on untrammeled character because of the restrictions on management and use.</p> <p>Similar to Alternative C, except only 11 water ponds or catchments for livestock could be developed, resulting in fewer adverse impacts than Alternatives C and D.</p>
<b>Naturalness (Defined by Indicators Presented in Appendix G)</b>	<p>Naturalness of the Wilderness would remain relatively stable.</p> <p>Replacing non-native trout with native trout species on the Uncompahgre Plateau could result in beneficial impacts on the naturalness of the Wilderness' aquatic systems.</p>	<p>Naturalness of the Wilderness would remain relatively stable.</p> <p>Due to the hands-off approach of this alternative, adverse impacts on naturalness could occur from weeds and/or wildfire.</p>	<p>This alternative would result in beneficial impacts on naturalness. Alternative C has the highest standard for desired future conditions (either "very good" or "good") for priority species and vegetation; naturalness has the greatest potential for beneficial impacts under this alternative.</p>	<p>Naturalness of the Wilderness would remain relatively stable.</p>	<p>This alternative would result in beneficial impacts on naturalness.</p> <p>The Proposed Plan Alternative has the second-highest standard for desired future conditions ("good") for priority species and vegetation. Thus, naturalness has the second-greatest potential for beneficial impacts under this alternative.</p>

Wilderness Characteristic	Alternative A	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<b>Undeveloped</b>	<p>This alternative would result in adverse impacts on undeveloped character.</p> <p>A trailhead was constructed in Cactus Park to provide access to the Wilderness. Plans are being developed to construct a new trail from the trailhead to the Cactus Park Trail where it drops into Big Dominguez Canyon. No actions would be taken to improve the undeveloped character of the area. Up to seven earthen dams would be constructed in the Wilderness</p>	<p>Undeveloped character of the Wilderness would remain relatively stable.</p>	<p>This alternative would result in adverse impacts on undeveloped character due to the construction of catchments for livestock within the Wilderness.</p>	<p>This alternative would result in adverse impacts on undeveloped character due to the construction of catchments for livestock within the Wilderness.</p> <p>Undeveloped character of the Wilderness would improve in Wilderness Zone 2.</p> <p>Opening 3,314 acres in Little Dominguez Canyon to livestock grazing would impact the undeveloped nature.</p>	<p>Same as Alternative C.</p>
<b>Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation</b>	<p>This alternative would result in adverse impacts on the wilderness characteristic of outstanding opportunities for solitude. However, this alternative would protect outstanding opportunities for primitive and unconfined recreation.</p> <p>In general, Alternatives A and B would be the least restrictive of visitor use.</p>	<p>This alternative would result in adverse impacts on the wilderness characteristic of outstanding opportunities for solitude. However, this alternative would protect or improve outstanding opportunities for primitive and unconfined recreation.</p> <p>In general, Alternatives A and B would be the least restrictive of visitor use.</p>	<p>This alternative would result in beneficial impacts on the wilderness characteristic of outstanding opportunities for solitude, and adverse impacts on outstanding opportunities for primitive and unconfined recreation.</p> <p>Alternative C would implement the most visitor use restrictions to protect or enhance opportunities for solitude.</p>	<p>This alternative would result in beneficial impacts on outstanding opportunities for solitude in Wilderness Zone 2 and beneficial impacts on outstanding opportunities for primitive and unconfined recreation in Wilderness Zone 3.</p> <p>Alternatives D and the Proposed Plan Alternative would implement some visitor use restrictions.</p>	<p>Same as Alternative D.</p>
<b>Unique and Supplemental Values</b>	<p>The health of unique and supplemental values would remain stable.</p> <p>The health of desert bighorn sheep could</p>	<p>This alternative would result in beneficial impacts on unique and supplemental values.</p> <p>The health of desert bighorn sheep would</p>	<p>This alternative would result in beneficial impacts on unique and supplemental values.</p> <p>The health of desert bighorn sheep would</p>	<p>The health of unique and supplemental values would remain stable.</p> <p>The health of desert bighorn sheep could</p>	<p>The health of unique and supplemental values would remain stable.</p> <p>The health of desert bighorn sheep could</p>

<b>Wilderness Characteristic</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>	<b>Proposed Plan Alternative</b>
	<p>decline as a result of interaction with domestic sheep outside the Wilderness.</p> <p>Cultural resources would continue to be adversely impacted by recreational use, impacts that would likely increase with any increase in visitor use.</p> <p>Priority habitats and vegetation would not be actively managed, and Alternative A would not include restrictions, so there would be no indirect improvement of unique and supplemental values.</p>	<p>improve as a result of the conversion of domestic sheep allotments to cattle allotments outside the Wilderness.</p> <p>Cultural resources would continue to be adversely impacted by recreational use, impacts that would likely increase with any increase in visitor use.</p> <p>Alternative B would include the most restrictions that could indirectly improve supplemental values (e.g., cultural sites).</p>	<p>improve as a result of the conversion of some domestic sheep allotments to cattle allotments outside the Wilderness.</p> <p>Protections for cultural resources in Wilderness Zone 1 would result in beneficial impacts on these resources.</p> <p>Alternative C would include the second-most restrictions that could indirectly improve supplemental values (e.g., cultural sites).</p>	<p>decline as a result of interaction with domestic sheep outside the Wilderness.</p> <p>Protections for cultural resources in Wilderness Zone 1 would result in beneficial impacts on these resources.</p> <p>Alternative D would include the fourth-most restrictions that could indirectly improve supplemental values (e.g., cultural sites).</p>	<p>decline as a result of association with domestic sheep outside the Wilderness.</p> <p>Protections for cultural resources in Wilderness Zone 1 would result in beneficial impacts on these resources.</p> <p>The Proposed Plan Alternative would include the third-most restrictions that could indirectly improve supplemental values (e.g., cultural sites).</p>

### **4.3.5. Lands with Wilderness Characteristics (outside Dominguez Canyon Wilderness and Remaining Wilderness Study Areas)**

This section discusses impacts on lands with wilderness characteristics from proposed management actions of other resources and resource uses. Existing conditions concerning lands with wilderness characteristics are described in section 3.2.5, Lands with Wilderness Characteristics.

The BLM has numerous authorities under FLPMA to maintain inventories of all public lands and their resources, including wilderness characteristics, and to consider such information during land use planning processes. During the D-E NCA RMP process, the BLM completed a review of lands within the D-E NCA to determine whether they possess wilderness characteristics. This review included only BLM-administered lands outside the Dominguez Canyon Wilderness and WSA. Wilderness characteristics include naturalness and outstanding opportunities for solitude or primitive and unconfined recreation within an area of sufficient size to allow associated management and protection. In the planning area, four areas with a total of 21,817 acres were found to have wilderness characteristics, on the basis of the BLM D-E NCA lands with wilderness characteristics inventory (BLM 2012k; available online: <http://1.usa.gov/1qKkMVi>).

Analysis for this section discusses the impacts of planning decisions on lands with wilderness characteristics, regardless of whether they are managed to protect those characteristics. Only potentially significant impacts are discussed in detail.

## **Methods of Analysis**

### ***Indicators***

Indicators of adverse impacts on lands with wilderness characteristics include degradation of the inventoried characteristics to a level at which the value of the wilderness characteristic would no longer be present within the specific area. Indicators of beneficial impacts on lands with wilderness characteristics include the protection or enhancement of the inventoried characteristics. The inventoried wilderness characteristics include the following:

- Size of roadless acres: Impacts would result from building roads that would reduce the roadless size.
- Naturalness (apparent naturalness, not ecological naturalness): Impacts would result from developments or vegetation manipulations that made the area appear less natural.
- Opportunities for solitude or primitive recreation: Impacts would result from increases in visitation or loss of recreation opportunities.
- Supplemental values: Impacts would result from any action that degrades the inventoried values.

Impacts on the wilderness characteristics of apparent naturalness, opportunities for either solitude or primitive and unconfined recreation, and supplemental values are considered in this analysis.

### ***Assumptions***

The analysis includes the following assumptions:

- Management of lands with wilderness characteristics to protect those characteristics is subject to valid existing rights.
- Where lands with wilderness characteristics are managed to protect those characteristics, those characteristics would be protected.

Implementing management for the following resources would have negligible or no impact on lands with wilderness characteristics and are therefore not discussed in detail: noxious and invasive weeds, science, education, land tenure and land use authorizations, national trails, and watchable wildlife areas.

### **Direct and Indirect Impacts**

Wilderness characteristics are primarily adversely impacted by actions that impact the undeveloped nature of the area or activities that increase the sights and sounds of other visitors. Generally, actions that create surface disturbance adversely impact the natural characteristics of lands with wilderness characteristics, as well as the setting for experiences of solitude and primitive recreational activities. The presence of roads and trails, the use of motorized vehicles along those roads and trails, fences and other improvement, and landscape modifications could all adversely impact an area's natural appearance.

Management actions that remove developments, prohibit use of motorized vehicles along existing roads and trails, or other actions that preclude surface-disturbing activities could beneficially impact an area's natural appearance.

Two other wilderness characteristics-outstanding opportunities for solitude and primitive, unconfined types of recreation-are related to the human experience in an area. Visitors could have outstanding opportunities for solitude and for primitive, unconfined recreation when the sights, sounds, and evidence of other people are rare or infrequent; where visitors can be isolated, alone, or secluded from others; where the use of the area is through non-motorized, non-mechanized means; and where no or minimal developed recreation facilities are encountered.

Under Alternative B, the four areas that were found to have wilderness characteristics (totaling 21,816 acres) would be managed to protect those characteristics. Under the Proposed Plan Alternative, two of the four areas that were found to have wilderness characteristics (totaling 13,597 acres) would be managed to protect those characteristics. Alternatives A, C, and D would not directly protect those areas' wilderness characteristics, although indirect protections of characteristics would occur under all alternatives to varying degrees. Table 4.38, Summary of Acreage Impacts on Lands with Wilderness Characteristics, provides a summary of the impacts of various management actions by alternative on lands with wilderness characteristics.



**Table 4.38. Summary of Acreage Impacts on Lands with Wilderness Characteristics**

<b>Management Action</b>	<b>Alt A (0 Acres Managed to Protect Wilderness Characteristics)</b>	<b>Alt B (21,816 Acres Managed to Protect Wilderness Characteristics)</b>	<b>Alt C (0 Acres Managed to Protect Wilderness Characteristics)</b>	<b>Alt D (0 Acres Managed to Protect Wilderness Characteristics)</b>	<b>Proposed Plan Alt (13,597 Acres Managed to Protect Wilderness Characteristics)</b>
<b>Subject to PSD Restriction</b>	0	21,816	12,718	11,918	6,393
<b>Subject to TL<sup>1</sup> Restriction</b>	0	6,142	6,142	947	4,444
<b>Subject to SSR Restriction</b>	0	0	6,212	6,441	13,300
<b>Open to Livestock Grazing</b>	21,815	17,209	19,372	19,482	19,479
<b>Open to Active Movement Only</b>	0	4,497	0	0	2,335
<b>RMAs</b>	0	0	308	11,773	8,217
<b>ACECs</b>	0	0	451	1,459	450
<b>Eligible/Suitable WSR Segments</b>	4,044	4,127	4,129	0	3,195
<sup>1</sup> The entire D-E NCA is closed to all surface-disturbing activities from May 15 to July 31; this is not reflected in the acres of areas closed by the TL above.					
Source: BLM 2012i					

### ***Impacts from Management of Geological and Paleontological Resources***

Excavation of paleontological resources would include surface-disturbing activities that could impact solitude, primitive recreation, and apparent naturalness in the short term. Impacts would be similar under all alternatives.

### ***Impacts from Management of Priority Species and Vegetation***

Where lands with wilderness characteristics units overlap priority vegetation, management actions to protect priority vegetation types would preserve wilderness characteristics by promoting a more naturally appearing/undeveloped landscape and unique and supplemental values, such as threatened and endangered species. Where vegetation treatments are implemented, solitude experienced by recreational users could be reduced in the short term. Apparent naturalness would likely be enhanced over the long term by restoring natural vegetation structures and patterns.

Management for priority vegetation would not apply to Alternative A, so any indirect enhancement of apparent naturalness and unique and supplemental values would occur on a case-by-case uncoordinated manner under this alternative. Alternative B would result in apparent naturalness conditions that are similar to current conditions (Alternative A), because management of priority vegetation would use a natural processes (untrammled) approach. The high expectation of priority vegetation in Alternative C would protect and enhance apparent naturalness through treatments that would lead to improvements in the health of vegetation communities. Similar impacts would be expected under Alternatives D and the Proposed Plan Alternative, although to a lesser extent, because expectations for biological restoration would be less ambitious than under Alternative C. Alternative C would result in the greatest improvement in vegetation communities, followed by the Proposed Plan Alternative.

### ***Impacts from Management of Special Status Species and Natural Communities***

Restrictions associated with special status species could indirectly protect wilderness characteristics by enhancing apparent naturalness and supplemental values. Aside from Alternative B, in which all lands with wilderness characteristics would be protected from surface-disturbing activities, Alternative C would most restrict surface-disturbing activities. This could indirectly improve the apparent naturalness of 58 percent of lands with wilderness characteristics, followed by Alternative D (55 percent of lands with wilderness characteristics) and the Proposed Plan Alternative (29 percent of lands with wilderness characteristics), as shown in Table 4.38. The Proposed Plan Alternative also would include SSR restrictions on 61 percent of lands with wilderness characteristics, which would relocate disturbance to avoid impacts on wilderness character. Alternative A would not include surface disturbance restrictions, so no indirect protections would occur, which could result in diminished apparent naturalness and supplemental values.

### ***Impacts from Management of Non–Special Status Fish and Wildlife***

Types of indirect impacts from fish and wildlife surface disturbance restrictions would be similar to those described under Impacts from Management of Special Status Species and Natural Communities, above.

### ***Impacts from Management of Fire and Fuels***

Management for wildfire has the potential to impact lands with wilderness characteristics. In areas where suppression is a priority, there is the potential for vegetation modification and surface disturbance to prevent the spread of fires, potentially reducing apparent naturalness. Wildland fire management would not likely impact lands managed to protect their wilderness characteristics in Alternatives B or the Proposed Plan Alternative. Under Alternatives A, C, D, and in some areas under the Proposed Plan Alternative, wildfire management could impact lands with wilderness characteristics. For example, more-aggressive fire suppression would likely occur in areas adjacent to private land and where other values are at risk.

### ***Impacts from Management of Soils and Water Quality***

Types of indirect impacts from soils and water quality surface disturbance restrictions would be similar to those described under Impacts from Management of Special Status Species and Natural Communities, above. For example, restrictions on soil and water resources management actions could preserve a naturally appearing, undeveloped landscape by preventing large-scale disturbances through the application of surface disturbance restrictions and other actions.

### ***Impacts from Management of Cultural Resources***

Types of indirect impacts from cultural resources surface disturbance restrictions would be similar to those described under Impacts from Management of Special Status Species and Natural Communities, above. For example, restrictions on surface use to protect cultural resources would limit visual impacts and habitat degradation, thereby protecting the wilderness characteristic of supplemental values.

### ***Impacts from Management of Wilderness***

The Dominguez Canyon Wilderness, where adjacent to lands with wilderness characteristics, would create additional protection for lands with wilderness characteristics, as the management

of the Wilderness would include protective measures. A wider expanse of contiguous land containing the Wilderness and lands with wilderness characteristics could therefore heighten protection within the lands with wilderness characteristics and further ensure the integrity of wilderness characteristics. The northern boundary of the Dominguez Addition Unit borders the Wilderness. Impacts would be the same under all alternatives.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Under Alternative B, the BLM would manage the Cottonwood Canyon, Dry Fork of Escalante, Dominguez Addition, and Gunnison Slopes lands with wilderness characteristics units (21,816 acres, or 16 percent of the D-E NCA outside the Dominguez Canyon Wilderness and WSA) to protect their wilderness characteristics, which would result in retention of their specific characteristics (detailed in the updated inventory (BLM 2012k) available at <http://1.usa.gov/1qKkMVi>) over the long term.

Conversely, the BLM would not manage any lands with wilderness characteristics to protect their wilderness characteristics under Alternatives A, C, or D. Management actions to protect other resources and special designation areas would indirectly protect wilderness characteristics, although surface-disturbing activities such as casual use (e.g., recreation) could alter apparent naturalness, as well as reduce opportunities for solitude or primitive recreation on all lands with wilderness characteristics. See the Recreation section, below, for impacts of recreation-specific management on lands with wilderness characteristics. While apparent naturalness and opportunities for solitude and primitive and unconfined types of recreation may be indirectly afforded protections by other management actions in Alternatives A, C, and D, those characteristics could change or degrade through the life of the RMP. Management under Alternative A has led to current conditions that have allowed wilderness characteristics to persist in four areas within the D-E NCA. Wilderness characteristics would likely persist in many of these areas under Alternative A; however, degradation of wilderness characteristics in at least some areas that currently possess wilderness characteristics would be likely.

Under the Proposed Plan Alternative, the BLM would manage the Cottonwood Canyon and Dry Fork of Escalante lands with wilderness characteristics units (13,597 acres, or 9 percent of the D-E NCA outside the Dominguez Canyon Wilderness and WSA) to protect their wilderness characteristics. In the two other units (Gunnison Slopes and Dominguez Addition), the BLM would not commit to protecting their inventoried wilderness characteristics, with similar impacts in those areas as those described for Alternatives A, C, and D. Under the Proposed Plan Alternative, not managing the Gunnison Slopes and the Dominguez Addition to protect wilderness characteristics would help maintain management flexibility for development of livestock facilities. Along the Gunnison River within the Gunnison Slopes unit riparian values could be impacted through livestock grazing activities. To mitigate these impacts, livestock water developments may need to be added within the Gunnison Slopes unit to attract livestock away from the riparian resources. Likewise, in the Dominguez Addition, management actions for livestock grazing could include several water developments inside the Dominguez Canyon Wilderness. Constructing water developments within the Dominguez Addition would reduce the number of developments needed inside the Wilderness.

### ***Impacts from Management of Scenic Values***

Designating lands with wilderness characteristics as VRM Class I would contribute to the protection of the wilderness characteristic of apparent naturalness. Designating lands with wilderness characteristics as VRM Class II could diminish apparent naturalness if activities

altering the existing landscape character, such as recreation or livestock grazing facilities, were allowed. Designating lands with wilderness characteristics as VRM Class III would allow more modifications to the landscape (than VRM Class II or I) that could impair the area's apparent naturalness.

Table 4.39, Impacts of VRM Class on Lands with Wilderness Characteristics, shows the proportion of lands with wilderness characteristics that would be managed under VRM Classes I, II, and III in each alternative. Overall, Alternative B would provide the most management to protect the wilderness characteristic of apparent naturalness on these lands, followed by Alternatives D, C, and the Proposed Plan Alternative. Alternative A would continue present management.

**Table 4.39. Impacts of VRM Class on Lands with Wilderness Characteristics**

VRM Class	Alternative A Acres	Alternative B Acres	Alternative C Acres	Alternative D Acres	Proposed Plan Alternative Acres
I	39 (0.2%)	21,817 (100%)	39 (0.2%)	11,145 (51%)	13,636 (63%)
II	10,043 (46%)	0	21,778 (99.8%)	10,671 (49%)	8,180 (37%)
III	11,734 (54%)	0	0	0	0
<i>Note: Percentages indicate percentage of lands with wilderness characteristics.</i>					
<i>Source: BLM 2012i</i>					

### ***Impacts from Management of Air Resources***

Reducing noise in the D-E NCA under Alternative C would protect the perception of solitude, maintaining or restoring the natural quiet of lands with wilderness characteristics. There would be no similar impacts under Alternatives A, D, or the Proposed Plan Alternative. Alternative B would emphasize quiet use, which would have similar impacts on the protection of the perception of solitude under Alternative C.

### ***Impacts from Management of Recreation***

Visitors could have outstanding opportunities for solitude or primitive and unconfined recreation when the sights, sounds, and evidence of other people are rare or infrequent and where visitors can be secluded from others. High concentrations of recreation users (large group sizes or frequent group encounters) would decrease outstanding opportunities for solitude. Visitor use restrictions on recreational activities that generate substantial human-caused noise (e.g., recreational target shooting) would increase outstanding opportunities for solitude.

In Alternative A, indirect impacts from recreation would be negligible, as there is no overlap of RMAs with lands with wilderness characteristics. Both OHV use and recreational target shooting would impact opportunities for solitude in some lands with wilderness characteristics.

Under Alternative B, limiting visitor use only as necessary to prevent substantial degradation to wilderness characteristics (i.e., apparent naturalness and opportunities for solitude) would protect opportunities for unconfined recreation. Providing opportunities for quiet, non-motorized, non-mechanized recreation would preserve the wilderness characteristics of solitude and primitive and unconfined recreation. Prohibiting issuance of SRPs for competitive events under Alternative B would result in visitor numbers and noise likely remaining at low levels, and the retention of apparent naturalness, solitude, and opportunities for primitive and unconfined recreation. The prohibition on recreational target shooting under this alternative would reduce the sites and

sounds of others, and thus could improve opportunities for solitude (note that restrictions on recreational target shooting do not apply to hunting).

Alternative C would indirectly protect wilderness characteristics on 1 percent of lands with wilderness characteristics by designating those lands as RMAs. The Gunnison River RMA would overlap 308 acres of the Gunnison Slopes lands with wilderness characteristics unit (6 percent of the unit, or 1 percent of total lands with wilderness characteristics) and would protect apparent naturalness on those lands, because the RMA would focus on a natural physical setting. The Gunnison River RMA would also be managed as non-motorized, so opportunities for primitive recreation would be protected on that 1 percent of the Gunnison Slopes Unit. There would not be visitor use restrictions on recreational target shooting in lands with wilderness characteristics under this alternative, which could result in impacts on outstanding opportunities for solitude.

Alternative D would indirectly protect wilderness characteristics on 54 percent (11,361 acres) of lands with wilderness characteristics by designating those lands as RMAs. The Gunnison Slopes RMA overlaps 4,785 acres of the Gunnison Slopes lands with wilderness characteristics unit (92 percent of the unit, or 22 percent of total lands with wilderness characteristics), and the Cottonwood Canyon RMA overlaps 6,576 acres of the Cottonwood Canyon unit (100 percent of the unit, or 30 percent of total lands with wilderness characteristics). Outstanding opportunities for primitive recreation would be protected on these 52 percent of lands with wilderness characteristics, because both RMAs would target wilderness-like recreation (i.e., primitive recreation and solitude, although the solitude characteristic does not exist in the Gunnison Slopes Lands with Wilderness Characteristics Unit). In addition, the Gunnison Slopes and Cottonwood Canyon RMAs would both be managed for non-motorized, non-mechanized, quiet trail users, so opportunities for primitive recreation would be protected in that manner as well. The Cottonwood Canyon RMA would also include a no surface-disturbance restriction, which would protect solitude, primitive recreation, and naturalness in the entire Cottonwood Canyon lands with wilderness characteristics unit. The Gunnison River RMA also would overlap 329 acres of the Gunnison Slopes lands with wilderness characteristics unit (6 percent of the unit, or 2 percent of total lands with wilderness characteristics), which would protect apparent naturalness, because the RMA would focus on a natural physical setting. Recreational target shooting would be prohibited in two of the four areas found to contain wilderness characteristics (Cottonwood Canyon and Gunnison Slopes), which could improve opportunities for solitude in those two areas.

The Proposed Plan Alternative would indirectly protect wilderness characteristics on 24 percent of lands with wilderness characteristics. These are the lands that would overlap with RMA designations that target wilderness-like recreation (i.e., primitive recreation and solitude). This includes the Ninemile Hill RMA, which would overlap 4,865 acres (22 percent) of all lands with wilderness characteristics. These lands include most of the Gunnison Slopes unit. Outstanding opportunities for solitude and primitive recreation would be protected in this unit, because the Ninemile Hill RMA would target hiking and horseback riding opportunities. In addition, the Ninemile Hill RMA would be managed for non-motorized, non-mechanized, quiet trail users, so opportunities for primitive recreation would be protected in that manner as well. Not allowing new trail construction below the rim of the Gunnison Slopes would result in fewer trails, which would protect apparent naturalness and solitude. Impacts of the Gunnison River RMA overlapping 328 acres of the Gunnison Slopes lands with wilderness characteristics unit would be the same as those described under Alternative D. There would not be visitor use restrictions on recreational target shooting in lands with wilderness characteristics under this alternative. However these areas are not popular for target shooting, so impacts are expected to remain minimal.

### ***Impacts from Management of Livestock Grazing***

Impacts on wilderness characteristics would be influenced by activities associated with the established livestock grazing allowed under all alternatives. Impacts on lands with wilderness characteristics are possible from livestock grazing, particularly from new structures (water developments and fences) in these areas, which could lessen apparent naturalness or limit unconfined recreation. Existing range improvements used for grazing, such as fences, stock trails, springs, and stock ponds, constitute an established use and would continue to be maintained. New structures could diminish the natural/undeveloped characteristics of lands with wilderness characteristics. Fencing also could limit unconfined recreation. Maintenance of range improvements could result in short-term impacts on solitude and apparent naturalness. Solitude on lands with wilderness characteristics would also be affected by the allowable motorized use for livestock grazing operations and construction of any new facilities necessary to manage and utilize AUMs.

In Alternative A, all lands with wilderness characteristics would remain open to livestock grazing. Alternative B would close 21 percent of lands with wilderness characteristics to livestock grazing and would restrict the construction of new livestock improvements. Alternatives C and D would close 11 percent of lands with wilderness characteristics to livestock grazing. Livestock grazing would be available on all lands with wilderness characteristics under the Proposed Plan Alternative. In those areas, the resulting reduction in associated fencing and motorized use for grazing operations would protect the natural, undeveloped characteristics of lands with wilderness characteristics in these areas. Similarly, the resulting reduction in range improvement maintenance would reduce the related short-term impacts on solitude and apparent naturalness during such maintenance. However, in other areas new livestock improvements, including fences, springs and stock ponds could be constructed, resulting in impacts on the natural, undeveloped characteristics of lands with wilderness characteristics.

The BLM may authorize construction of new livestock watering facilities within the Wilderness in accordance with the Wilderness Act and congressional grazing guidelines. If water developments are authorized for livestock grazing allotments that include this Wilderness, the BLM would first look at opportunities to construct new developments outside of it. This would likely include lands within the Dominguez Addition lands with wilderness characteristics unit. If livestock water developments are constructed in lands with wilderness characteristics unit(s), it would diminish apparent naturalness from additional developments. It also would diminish opportunities for solitude from more frequently authorized activity by the livestock grazing permittee, potential new routes to the developments, and possibly motor vehicle access into the area.

Additionally, the BLM would continue to manage the area along the Gunnison River for livestock grazing in a manner that protects the riparian plant community. If monitoring indicates that livestock grazing is not preventing that area from meeting the PPSV objectives for the river corridor, the BLM, through a site-specific environmental analysis, might develop livestock grazing water sources in the Gunnison Slopes area inventoried to have wilderness characteristics. As for the Dominguez Addition, new livestock water developments would result in man-made infrastructure within the inventoried area, degrading its wilderness characteristics. Along with physical development, the BLM could allow authorized motorized use for the maintenance and inspection of these water developments. This motorized use would result in new routes in the area and increase the possibility of a visitor encountering a livestock grazing operator using a motorized vehicle. Both the new routes and the increased possibility of visitor contact with motorized users could degrade the area's inventoried wilderness characteristics.

### ***Impacts from Management of Transportation and Travel***

Closing lands with wilderness characteristics to public motorized and mechanized use under Alternative B would protect wilderness characteristics by restricting activities that could impact natural appearance and opportunities for solitude and primitive/unconfined recreation. Alternative B also would reduce travel route density, thereby further protecting wilderness characteristics.

Exceptions to exclusions on motorized and mechanized vehicles could result in a short-term detracting from the apparent naturalness of the areas. In addition, there is a potential for a short-term elimination of solitude and apparent naturalness from increased sights and sounds associated with the use of equipment and mechanical transport. These impacts would be uncommon and short term in nature if they do occur. On a more-regular basis, motorized and mechanized use for established livestock grazing would have short-term impacts on opportunities for solitude and apparent naturalness.

There is the potential for degradation of wilderness characteristics from motorized and mechanized travel on designated routes under Alternatives A, C, D, and the Proposed Plan Alternative. Such travel could impact apparent naturalness and opportunities for solitude and primitive and unconfined recreation. Alternative C would result in the most reduction in travel routes, and closed routes would be rehabilitated to return to a more natural state, which would protect apparent naturalness along those specific routes.

### ***Impacts from Management of Areas of Critical Environmental Concern***

Where lands with wilderness characteristics overlap or are adjacent to ACECs, management of ACECs could indirectly protect wilderness characteristics due to the protective measures proposed for the ACECs. As shown in Table 4.38, Summary of Acreage Impacts on Lands with Wilderness Characteristics, 450 acres of the River Rims ACEC overlaps 9 percent of the Gunnison Slopes lands with wilderness characteristics unit under Alternatives C and the Proposed Plan Alternative, thereby potentially indirectly protecting wilderness characteristics on 2 percent of all lands with wilderness characteristics. In Alternative D, the Gunnison River ACEC could indirectly protect 1,459 acres (28 percent) of the Gunnison Slopes lands with wilderness characteristics unit (7 percent of all lands with wilderness characteristics). There would be no similar indirect protections under Alternatives A or B.

### ***Impacts from Management of Wild and Scenic Rivers***

Where lands with wilderness characteristics overlap or are adjacent to WSRs, management of those rivers could indirectly protect wilderness characteristics due to the protective measures proposed for rivers. As shown in Table 4.38, Summary of Acreage Impacts on Lands with Wilderness Characteristics, 4,044 acres adjacent to stream segments within the Gunnison Slopes and Cottonwood Canyon lands with wilderness characteristics units would be managed to maintain their eligibility for inclusion in the NWSRS in Alternative A, thereby potentially indirectly protecting wilderness characteristics on 19 percent of all lands with wilderness characteristics. Alternatives B and C would each manage the same 19 percent of lands with wilderness characteristics as suitable in the Gunnison Slopes and Cottonwood Canyon lands with wilderness characteristics units. No streams would be managed as suitable in Alternative D, so there would be no indirect protections of wilderness characteristics under Alternative D. Under the Proposed Plan Alternative, the Cottonwood Creek segment overlaps the Cottonwood Canyon lands with wilderness characteristics unit, providing indirect protections of wilderness characteristics under the Proposed Plan Alternative in this location only.

### ***Impacts from Management of Wilderness Study Areas***

The Dominguez Canyon WSA, where adjacent to lands with wilderness characteristics, would create additional protection for lands with wilderness characteristics, as the management of the WSA would include protective measures. A wider expanse of contiguous land containing the WSA and lands with wilderness characteristics could therefore heighten protection within the lands with wilderness characteristics and further ensure the integrity of wilderness characteristics. A very small area in the southernmost tip of the Gunnison Slopes Lands with Wilderness Characteristics Unit borders the WSA in the north-central portion of the D-E NCA. Impacts would be the same under all alternatives.

### **Summary of Impacts from Alternatives**

Over the long term, Alternative B would result in the most beneficial impacts for the wilderness characteristics on lands with those characteristics, because Alternative B would specifically protect lands with wilderness characteristics. Alternatives A, C, and D would not directly preserve wilderness characteristics, so any protection of wilderness characteristics would only occur indirectly from other resource management, notably recreation decisions and restrictions on surface-disturbing activities. Of these three alternatives, Alternative C would result in the most indirect protections. The Proposed Plan Alternative would directly protect two of the four units found to contain wilderness characteristics, and would lead to some indirect protections in the other two units found to contain wilderness characteristics. Under Alternatives A, C, D, and the Proposed Plan Alternative, some areas with wilderness characteristics would experience adverse impacts.

### **Cumulative Impacts**

The identified lands with wilderness characteristics are present today due to past actions, or lack thereof, both on BLM and non-BLM land. Due to the isolated, roadless nature of the units and their surrounding areas, it is not anticipated that present and reasonably foreseeable future actions would degrade the wilderness character of these areas.

The final Colorado Roadless Rule identified the Kelso Mesa and Dominguez Colorado Roadless Areas in the Uncompahgre National Forest to the west of the D-E NCA (77 FR 39576–39612, July 3, 2012). The rule conserves roadless area characteristics by prohibiting tree cutting, sale, or removal; road construction and reconstruction; and linear construction zones, with some limited exceptions. This adjacent management would enhance the qualities of naturalness and solitude of the areas by extending them over a larger area.

## **4.3.6. Scenic Resources**

### **Methods of Analysis**

The four visual resource inventory (VRI) classes form the basis for the analysis in this section (see Table 4.40 below). VRI classes use the same numerical scale (i.e., I through IV) as VRM classes. They are the categories the BLM uses to classify the current visual character of the landscape and are a way to communicate the degree of visual quality in the area. Generally, VRI Class I indicates high visual value and VRI Class IV indicates low visual value. Because VRI Class I is reserved for areas where congressional or administrative decisions were already made to preserve



the natural setting outside of the inventory process (e.g., Wilderness Areas), these areas are not inventoried for visual value. The VRI is on file at the BLM's Grand Junction Field Office.

Impacts on visual resources are assessed by the proposed VRM classifications proposed under each alternative. VRM classifications determine the allowable level of change to a landscape. VRM Class I allows little to no change; VRM Class II allows minor changes; VRM Class III allows moderate changes; and VRM Class IV allows significant changes. Landscapes managed under VRM Class I and II would be protected, and as such, there would be little or no impact on the scenic values. Conversely, landscapes managed under VRM Class III and IV would be at risk for changes that could adversely impact scenic values.

The intensity of impacts would depend on the three components of the visual resource inventory (scenic quality, sensitivity level, and distance zones). In the D-E NCA, all distance zones are classified as foreground and middle ground. As such, the intensity of impacts related to distance zones would be the same for all actions throughout the NCA. Landscapes with a high scenic quality rating have more visual variety and can hide development more easily than landscapes with little visual variety. That said, areas with high scenic quality are likely more valued, and changes that would be allowed under VRM Class III and IV management would result in higher intensity impacts than areas with lower scenic quality. Of the three inventory components the sensitivity level is the best measure of the intensity of impacts on visual resources. Landscapes with high sensitivity are landscapes the public regards as high value and where changes would likely be noticed. The intensity of impacts from VRM Class III and IV management would be greater in areas with the highest scenic quality rating (7 percent of NCA) and in areas with the highest sensitivity level rating (58 percent of the NCA).

**Table 4.40. Anticipated Intensity of Impacts on Inventoried Visual Resources from VRM Classifications**

Visual Resource Inventory Component	VRM Class			
	Class I (Minimal Landscape Modifications)	Class II	Class III	Class IV (Major Landscape Modifications)
Distance Zone	Low	Low	Low	Low
Scenic Quality	Low	Low-moderate	Moderate	High
Sensitivity	Low	Low-moderate	Moderate	High

Outside of the Dominguez Canyon Wilderness, which automatically received a VRI Class I rating and so was not specifically assessed for the three components, the landscape is entirely within the foreground/middle ground distance zone. This is not expected to change from management under any of the alternatives so the analysis does not further consider changes to distance zones. As such, the following impact analysis focuses on the potential for change in scenic quality and impacts on visually sensitive areas. Under no alternative would the scenic quality be anticipated to significantly improve. In summary, all or portions of 12 scenic quality rating units within the D-E NCA, including Dominguez Canyon Wilderness and WSA, which were not rated, would be assessed for impacts on scenic quality.

When assessing scenic quality, seven factors are considered: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. Of these factors, decisions in this RMP have the highest potential to change vegetation, color, and cultural modifications. Where cultural modifications would be allowed, there could be a change in the variety of vegetation forms, patterns, or texture from construction activities, removing vegetation, and changing soil composition. Furthermore, where cultural modifications would be allowed to the extent that the

basic components of the landscape (e.g., vegetation, soil, and rock) change drastically, the variety, contrast, and harmony of color could change as well.

### ***Indicators***

Indicators of adverse impacts on visual resources include the following:

- A proposed VRM class that would allow changes to the landscape that could alter its character enough that future visual resource inventories would result in a reclassification. For example, an area currently managed for VRM Class IV objectives has VRI Class II lands. The level of change allowed by VRM Class IV could alter the landscape to the point that future visual resource inventories could result in reclassifying the area to VRI Class III or IV.

### ***Assumptions***

The analysis includes the following assumptions:

- The scenic vistas within the planning area would become more sensitive to visual change; in other words they would increase in sensitivity or public concern over the next 20 years;
- Visitors to BLM-administered lands or residents living near BLM-administered lands are sensitive receptors for impacts on visual quality;
- Activities that cause the most contrast and are the most noticeable to the viewer and the public would be considered to have the greatest effect on scenic quality and sensitivity;
- The magnitude (or dominance) of a visual effect depends on a variety of factors, including the size of a project (i.e., area disturbed, physical size of structures), the location and design of roads and trails, and the overall visibility of disturbed areas;
- The more protection that is associated with the management of other resources and special designations, the greater the benefit to visual resources of the surrounding viewsheds;
- Visual resource design techniques and BMPs would be implemented to mitigate potentially harmful impacts; and
- Visual contrast ratings would be required for all projects to determine conformance to the VRM decisions in the RMP and to identify ways to reduce visual contrast. The visual contrast rating system would be used as a guide to analyze site-specific impacts from projects as well as project design and placement. Projects would be designed to minimize their visual impacts in order to conform to the area's VRM class objective. This would allow the BLM to reduce impacts on a site-specific basis to ensure compliance with the assigned VRM class objectives.

Implementing management for the following resources or resource uses would have negligible or no impact on scenic resources and are therefore not discussed in detail: **geological and paleontological resources**, air resources, science, education, and watchable wildlife areas.

## **Direct and Indirect Impacts**

Restrictions on surface-disturbing activities would be implemented in order to protect special status species and their habitat, fish and wildlife and their habitat, soils and water quality, and

cultural resources. Where surface-disturbance is prohibited, the scenic quality of the landscape would be maintained and adverse impacts on sensitive landscapes would be prevented.

As summarized in Table 2.1, Summary Comparison of Alternatives, in section 2.5, surface-disturbing activities would not be expressly prohibited under Alternative A, although the non-impairment criteria in the WSA would restrict surface-disturbing activities (see “Impacts from Management of Wilderness and Impacts from Management of Wilderness Study Areas”). Alternative B would have the most restrictions on surface-disturbing activities, resulting in the most beneficial impacts as previously described. The nature and type of impact would be the same under Alternatives C, D, and the Proposed Plan Alternative, but over fewer acres (see Table 2.1 in section 2.5).

### ***Impacts from Management of Priority Species and Vegetation and Noxious and Invasive Weeds***

Planning for priority species and vegetation could benefit the overall scenic quality of the D-E NCA. While short-term localized disturbances would occur from vegetation treatments, the long-term emphasis on healthy native or desired plant communities would, at a minimum, contribute to the maintenance of the scenic quality of the D-E NCA.

Under Alternatives C, D, and the Proposed Plan Alternative, the BLM would authorize the use of vegetation treatments to meet priority vegetation objectives, which could create visual contrast in the short-term but could result in improved visual quality, particularly the vegetation factor, in the long-term.

Under Alternative B, the BLM would not authorize vegetation treatments unless necessary (refer to Chapter 2). Because vegetation treatments would generally not be authorized except in special circumstances, visual contrast from such treatments would not be experienced under this alternative.

The removal of noxious and invasive weeds can introduce contrast to the visual landscape. However the effects would be localized and, over the long-term, would allow for the regrowth of native vegetation, which would benefit the scenic values of the D-E NCA over the long-term. Impacts would be the same across the alternatives.

### ***Impacts from Management of Special Status Species and Natural Communities, Non-Special Status Fish and Wildlife, and Soil and Water Quality***

There could be incidental impacts on visual resources where managing for special status species, fish and wildlife habitat, and soils and water quality requires prohibition of surface-disturbing activities. In these areas, the scenic quality of the landscape would be maintained. In the case of soils and water, the surface-disturbing activities associated with these resource programs are primarily involved in restoring healthier and more diverse native plant communities to the landscape, these programs would protect visual resources over the long term. The construction of installations to protect special status species and fish and wildlife habitats would introduce new contrasts to the landscape. However they would still be required to meet VRM objectives and are usually small in scale.

### ***Impacts from Management of Fire and Fuels***

Wildland fire can cause great contrast to the natural landscape, removing large swaths of vegetation and leaving behind visible scars. However these impacts are generally short-term as over the long-term, fires allow for the regrowth of native or appropriate adapted vegetation and

improves ecological health. Fire suppression techniques have the potential to impact visual resources if fire lines are placed directly up slopes where they are visible for long distances. This action may be necessary occasionally, but post-fire rehabilitation of fire lines would be used to minimize the visual impact. Implementing minimum impact suppression tactics can also mitigate impacts on visual resources by using the minimum amount of force necessary to effectively achieve the fire management protection objectives. These tactics would minimize the long-term effect on scenic resources from fire suppression tactics. Using unplanned fire for multiple objectives (including resource benefit) can reduce land-scarring fire suppression that may affect visual resources. Impacts would be the same across the alternatives.

### ***Impacts from Management of Cultural Resources***

Management of cultural resources can indirectly impact scenic resources where visual integrity is part of the eligibility of a cultural resource or site or where a cultural resource or site relies on a visual setting to maintain its integrity. In these instances, the existing visual character of the landscape would need to be maintained. Management of cultural resources for public education could impact the landscape if enough people are drawn to the area that additional soil compaction occurs along trails leading to the area, trash left by visitors, signage, or through vandalism of rock art sites. These impacts would be localized and signage would have to meet objectives of the VRM class of the area. Impacts would be the same across the alternatives.

### ***Impacts from Management of Wilderness***

Managing the Dominguez Canyon Wilderness would protect visual resources in the area both directly and indirectly. The area is managed according to VRM Class I objectives to maintain the existing character of the landscape. The potential for less than negligible impacts on visual resources from valid existing rights and special provisions would primarily be attributed to livestock grazing (see *Impacts from Management of Livestock Grazing* for impacts on scenic values associated with livestock grazing).

The Wilderness Act prohibits permanent and temporary roads, the use of motorized vehicles and equipment, mechanical transport, and the installation of structures within wilderness areas. As such, developments such as new power lines, energy installations, communication sites, and recreation facilities that could otherwise contrast with the form, line, color, and texture of the area are precluded.

Under all alternatives, the Dominguez Canyon Wilderness would be managed according to VRM Class I objectives to preserve the existing character of the landscape. One inholding owned by CPW exists within Dominguez Canyon Wilderness with an unpaved access route for administrative use only. It is unlikely that any development that would jeopardize the visual quality of the area would occur on this property.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Managing lands to protect wilderness characteristics outside of the Dominguez Canyon Wilderness and WSA could provide indirect protection to visual resources by prohibiting surface-disturbing activities, including new power lines, energy installations, communication sites, range improvements, and recreation facilities.

All lands with wilderness characteristics outside of the Dominguez Canyon WSA would be managed for the protection of their wilderness characteristics under Alternative B. This would

provide direct protection to scenic quality as the areas would be managed according to VRM Class I objectives. Managing for the characteristics of naturalness, would also benefit the scenic quality of these areas by preserving the natural landscape. Two of the four units found to contain wilderness characteristics would be managed for the protection of their wilderness characteristics under the Proposed Plan Alternative. In these two areas, impacts would be the same as those described for Alternative B. Under Alternatives A, C, and D there would be no known impacts on visual resources from management of lands with wilderness characteristics, because the BLM would not manage for the protection of those characteristics.

### ***Impacts from Management of Scenic Values***

Impacts on visual resources are assessed by comparing the VRI class of an area to the VRM class for the same area. At a landscape level, the more VRI Class I and II areas that are managed as either VRM Class I and II, the more protection would be afforded to areas with high visual quality or highly sensitive landscapes. VRI Class III and IV areas would also receive protection from VRM Class I management, because the area would be preserved at the current VRI Class. The results of the VRI completed in 2009 are presented in Table 3.32, VRI Inventory Class.

Under Alternative A, only the Dominguez Canyon Wilderness and WSA would be managed as VRM Class I (69,238 acres, 32 percent). An additional 36,769 acres (17 percent) would be managed as VRM Class II and the remaining 104,871 acres (51 percent) would be managed as VRM Class III.

Under Alternatives B, C, D, and the Proposed Plan Alternative, the entire D-E NCA would be managed as either VRM Class I or II, thereby precluding much development that could impact scenic resources as any development would have to meet Class I or II objectives, which call for the preservation or retention of the existing character of the landscape, respectively.

Alternative A would offer the highest potential for changes to the VRI classification of the landscape on the basis of the VRM classification of those lands. Under this alternative, more lands with an inventory classification of II, III, or IV are managed as VRM Class III, which allows moderate changes to the landscape. However, all lands that inventoried as a Class III or IV have a scenic quality ranking of “C” due to the low level of landscape complexity and existing cultural modifications and were identified as having low or medium visual sensitivity. Within lands assigned VRI Class II (68,378 acres), 30,196 acres (44 percent) are managed as VRM Class II and 35,459 acres (52 percent) are managed as VRM Class III (see Table 4.41, Summary of VRI Class by VRM Class). Within the 35,459 acres of VRI Class II lands that are managed as VRM Class III, all acres have a high visual sensitivity level, 4,857 acres (14 percent) have a scenic quality ranking of “A,” and the remaining 30,602 acres (86 percent) have a scenic quality ranking of “B.” Within these areas, authorized uses that removed or changed the vegetation composition or increased the level of cultural modifications could result in an impact great enough to move the scenic quality rating unit to a lower level.

**Table 4.41. Summary of VRI Class by VRM Class**

VRM Class	VRM Class Acres	Acres of VRI Class Managed by VRM Class			
		VRI Class I (66,443 Acres)	VRI Class II (68,378 Acres)	VRI Class III (52,208 Acres)	VRI Class IV (22,533 Acres)
Alternative A					
VRM Class I	69,238	66,353 (100%)	2,706 (4%)	178 (<1%)	--
VRM Class II	36,769	61 (<1%)	30,196 (44%)	5,859 (11%)	11 (<1%)

VRM Class	VRM Class Acres	Acres of VRI Class Managed by VRM Class			
		VRI Class I (66,443 Acres)	VRI Class II (68,378 Acres)	VRI Class III (52,208 Acres)	VRI Class IV (22,533 Acres)
VRM Class III	104,871	29 (<1%)	35,459 (52%)	46,170 (88%)	22,521 (100%)
<b>Alternative B</b>					
VRM Class I	93,468	66,392 (100%)	20,431 (30%)	5,308 (10%)	1,338 (6%)
VRM Class II	116,519	51 (<1%)	47,947 (70%)	46,900 (90%)	21,196 (94%)
<b>Alternative C</b>					
VRM Class I	71,679	66,351 (100%)	3,183 (5%)	2,145 (4%)	--
VRM Class II	138,308	92 (<1%)	65,195 (95%)	50,062 (96%)	22,533 (100%)
<b>Alternative D</b>					
VRM Class I	107,636	66,352 (100%)	18,891 (28%)	10,005 (19%)	12,171 (54%)
VRM Class II	102,351	91 (<1%)	49,487 (72%)	42,203 (81%)	10,362 (46%)
<b>Proposed Plan Alternative</b>					
VRM Class I	82,830	66,353 (100%)	14,945 (22%)	182 (<1%)	1,338 (6%)
VRM Class II	127,169	91 (<1%)	53,432 (78%)	52,025 (100%)	21,196 (94%)

Source: BLM 2012i

Under the action alternatives, all lands would be managed as either VRM Class I or II, which would protect the existing character of the landscape.

Of the 116,519 acres proposed for VRM Class II management under Alternative B, surface-disturbing activities would be prohibited on 50,945 acres (44 percent), thus ensuring that the existing characteristic of the landscape would be preserved.

Of the 138,308 acres proposed for VRM Class II management under Alternative C, surface-disturbing activities would be prohibited on 57,582 acres (42 percent), thereby ensuring that the existing characteristic of the landscape would be preserved.

Of the 102,351 acres proposed for VRM Class II management under Alternative D, surface-disturbing activities would be prohibited on 21,491 acres (21 percent), thereby ensuring that the existing characteristic of the landscape would be preserved.

Of the 127,169 acres proposed for VRM Class II management under the Proposed Plan Alternative, surface-disturbing activities would be prohibited on 23,805 acres (19 percent), thereby ensuring that the existing characteristic of the landscape would be preserved.

### ***Impacts from Management of Recreation***

Impacts from recreation are often visible only in the foreground, but they also may be seen in the middle and background in landscapes, such as mountains, which are visible from long distances. Recreation uses that would increase travel and vehicle-based camping or other activities that would change the natural character of the landscape could impact scenic and visual resources by creating contrasts to the color, form, texture, and line elements of scenic views. Improperly sited or designed trailhead facilities, such as restrooms, fences, information kiosks, as well as potential long-term visitor areas and extended stay or short-term camping areas, can affect scenic quality.

Although recreational activities are temporary in nature, the impacts of these activities can be long-lasting. Target shooting activities allowed outside of developed areas often leave behind targets, shells, and trash. They also have the potential to cause vegetation and surface impacts. Bullet imprints on rock walls, whether left intentionally or unintentionally, could permanently impact visual quality. This is particularly true for the highly scenic and vulnerable canyon walls

of Big and Little Dominguez, Escalante, East Creek and Gunnison River Canyons. Evidence of paintball can similarly impact visual quality.

It is recognized that the experience of recreational users on public lands is frequently dependent on the visual character of the areas being used. Most public land recreationists are seeking a recreation experience in a natural appearing landscape. To this end, facilities intended to support recreation management are designed to repeat the color, form, line, and texture of the landscape as much as possible.

Because all lands would be managed as VRM Class I or II under the action alternatives, the existing character of the landscape (all VRI classes) would either be preserved or retained. By requiring land use authorizations to conform to assigned VRM classes, most recreational activities and development would have no or negligible impacts on visual resources under the action alternatives.

Under Alternative A, the Gunnison River has a scenic quality ranking of “A” and is managed in part as VRM Class III. Attributes of scenic quality that are susceptible to change from recreation activities and associated development include vegetation, color, and cultural modifications. The addition of cultural modifications (e.g., recreational facilities) could impact the vegetation and thus color. It is unlikely that recreational facilities would be developed on the scale that would affect scenic quality enough to move the area from an “A” ranking to a “B” ranking, because the majority of recreation in this area is water-based and does not require large or numerous facilities.

Escalante Canyon, the Cottonwood Canyon portion of the Monitor Mesa Complex, Upper Big Dominguez Canyon, and Wagon Park all have a scenic quality ranking of “B.” Portions of Escalante Canyon and Monitor Mesa Complex are managed as VRM Class II to maintain the existing character of the landscape so any additional cultural modifications to the area are not likely to promote strong disharmony or introduce discordant elements that would move the scenic quality of these areas to a “C” ranking. The remaining areas with a scenic quality ranking of “B” would be managed as VRM Class III and would be susceptible to recreation activities and development that could add discordant cultural modifications and affect the vegetation and color to the degree that the scenic quality changes to a “C” ranking.

All other areas have a scenic quality ranking of “C.” While recreational activities and associated development may impact vegetation, color, and cultural modifications, they would not decrease the scenic quality or overall VRI classification of the areas.

Recreational target shooting would be allowed throughout the D-E NCA (with the exception of three developed recreation sites) in Alternative A, with impacts on visual resources from left-behind targets, shells, trash, and bullet imprints. Paintball would also be allowed throughout the D-E NCA, which could lead to resulting impacts on scenic quality. Impacts from target shooting would be eliminated under Alternative B due to an NCA-wide ban on this activity (note that restrictions on recreational target shooting do not apply to hunting). Under Alternatives C, the BLM would close 50 percent of the D-E NCA to recreational target shooting. Of the canyons that are particularly vulnerable to impacts on scenic quality from bullet imprints, this closure would provide protection for Big and Little Dominguez and Gunnison River Canyons, but would not provide protections for Escalante or Unaweep Canyons (East Creek). Under Alternative D, the BLM would close 75 percent of the D-E NCA to recreational target shooting. This closure would provide protection for all of the particularly vulnerable scenic canyons described above. Thus this alternative would provide greater protection to scenic quality than Alternative C. Under Alternatives C and D, closures may drive this activity to areas that are not closed which could

concentrate target shooting impacts in those areas. Under the Proposed Plan Alternative, the BLM would close approximately 5 percent of the D-E NCA to recreational target shooting. Of the canyons that are particularly vulnerable to impacts on scenic quality from bullet imprints, this closure would provide protection for the lower portions of Big and Little Dominguez Canyons, as well as for Escalante, Unaweep, and the Gunnison River Canyons. Upper portions of Big and Little Dominguez Canyons would not receive similar protections.

Paintball would be allowed in Alternatives A and D, resulting in impacts on visual quality. This activity would be prohibited in Alternatives B, C, and the Proposed Plan Alternative, thus eliminating these impacts on visual quality.

### ***Impacts from Management of Livestock Grazing***

Areas of livestock concentration where vegetation is removed and soil compaction has occurred would continue to create a contrast with the landscape and potentially reduce scenic quality. Range improvements such as fences, wells, and stock ponds could contrast with the natural setting. However, these facilities tend to be localized and difficult to see from a long distance.

Because all lands would be managed as VRM Class I or II under the action alternatives, the existing character of the landscape (all VRI classes) would either be preserved or retained. By requiring land use authorizations to conform to assigned VRM classes, most range improvements for livestock would have no or negligible impacts on visual resources under the action alternatives.

Under Alternative A, the Gunnison River has a scenic quality ranking of “A” and is managed in part as VRM Class III. Attributes of scenic quality that are susceptible to change from livestock grazing and associated development include vegetation, color, and cultural modifications. A portion of the Gunnison River corridor is unallotted for livestock grazing so these areas would not experience impacts on scenic values from livestock grazing management. Outside of the unallotted area, soil compaction and trampling of vegetation have the potential to impact vegetation and color. Development of range improvements for livestock could also add cultural modifications with discordant elements, although, because these facilities are localized and difficult to see from long distances, it is unlikely that the scenic quality would be reduced to a “B” ranking due to livestock grazing practices in this area.

Escalante Canyon, the Cottonwood Canyon portion of the Monitor Mesa Complex, Upper Big Dominguez Canyon, and Wagon Park all have a scenic quality ranking of “B.” Portions of Escalante Canyon and Monitor Mesa Complex are managed as VRM Class II to maintain the existing character of the landscape so any additional cultural modifications to the area are not likely to promote strong disharmony or introduce discordant elements that would move the scenic quality of these areas to a “C” ranking. The remaining areas with a scenic quality ranking of “B” would be managed as VRM Class III and would be susceptible to livestock grazing and development that could add discordant cultural modifications and affect the vegetation and color to the degree that the scenic quality changes to a “C” ranking.

All other areas have a scenic quality ranking of “C” and so cannot move into a lower scenic quality ranking. While range improvements for livestock may impact vegetation, color, and cultural modifications, they won’t decrease the scenic quality or overall VRI classification of the areas.



### ***Impacts from Management of Transportation and Travel***

Decisions made for transportation and travel management are meant to support the needs of other resources and resource uses. While neither motorized nor mechanized cross-country travel would be permitted in the D-E NCA, both modes of travel on designated routes can cause visual intrusions in the form of vegetation removal, soil compaction, and rutting, for example. Dust could be visible during regular short-term intervals, reducing visibility of landscape features. The magnitude of the impact would depend upon both the vehicle type and the amount of use. Any decrease in motorized and mechanized routes or an increase in route closures would reduce the level of dust and vegetation loss.

Under all alternatives, the Dominguez Canyon Wilderness would be closed to motorized and mechanized travel, eliminating impacts on visual resources from motorized and mechanized travel in the area.

Alternative A would continue to maintain the Dominguez Canyon WSA as closed to motorized and mechanized travel, eliminating impacts on visual resources from motorized and mechanized travel in the area. However, 140,445 acres of the D-E NCA are open to cross-country mechanized travel, which allows for an ever-increasing number of mechanized routes. The proliferation of routes causes modifications to the landscape resulting in contrasts of form, line, and color. Outside of areas closed to motorized and mechanized travel, Alternatives B, C, D, and the Proposed Plan Alternative would limit motorized and mechanized travel to designated routes, reducing the potential risk for route proliferation to impact visual resources.

Alternative B would close the most area (90,981 acres) to motorized and mechanized travel, and 282 miles<sup>3</sup> of routes would be closed. These trails would be allowed to naturally rehabilitate over time, which would improve the scenic quality of the area by moving it more toward its natural state. The natural rehabilitation process would occur over a longer period of time than under alternatives where the BLM would also use a hands-on approach to rehabilitating routes.

Under Alternatives C, D, and the Proposed Plan Alternative, only the Dominguez Canyon Wilderness would be closed to motorized and mechanized travel. Alternative C would close 351 miles<sup>3</sup> of routes; Alternative D would close 220 miles<sup>3</sup> of routes; and the Proposed Plan Alternative would close 144 miles of routes. Because of the extent to which route density would be reduced under Alternative C, the scenic quality rankings in certain areas of the D-E NCA could be improved, particularly in Cactus Park, Ninemile Hill, and the Hunting Ground.

Under Alternatives C, D, and the Proposed Plan Alternative, the BLM would use a hands-on approach to rehabilitating closed routes, which would improve the visual quality of the area over a shorter time frame than allowing for natural rehabilitation processes to take place.

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

The location of new ROWs, including power lines, pipelines, access roads, and communication sites could heavily impact visual resources by introducing contrast in form, line, color, and texture. Areas that inventoried as Class I or II would be most susceptible to these changes. Depending upon the scale of development, there may also be an impact on lands that inventoried as Class III or IV. Utilities, communication facilities, and energy facilities, as well as their ancillary facilities and structures, could impact visual and scenic resources by necessitating

<sup>3</sup>Numbers recalculated to account for miles consistently between Proposed Plan Alternative and Draft Plan alternatives.

construction and vegetation clearing. Overhead utilities, high-voltage electricity transmission lines, wind generation facilities, and cellular phone towers can be visible from long distances, while facilities such as solar energy, which are typically closer to the ground, may more directly affect middle-distance viewing. By requiring land use authorizations to conform to assigned VRM classes, most developments are expected to have effects on the visual resource without requiring reclassification.

Land tenure adjustments, such as acquisitions or exchanges, can affect scenic quality or viewer sensitivity. Acquisitions can help protect visual and scenic values by bringing scenic areas into BLM management and protecting or restoring their visual and scenic values.

Under all alternatives, a minimum of 91,327 acres would be identified as unsuitable for public utilities (Alternative A) or ROW exclusion (Alternatives B, C, D, and the Proposed Plan Alternative), including the Dominguez Canyon Wilderness and WSA, the Gunnison River corridor, and 1,000 acres within Cactus Park. This would provide scenic protection from utility development and new access roads in these areas. Additional facilities developed at the Ninemile Hill communication site or other areas of the D-E NCA would introduce contrast to form, line, color, and texture. Impacts from the management of two utility corridors, the West-wide Energy corridor and the Unaweep Canyon corridor, would encourage the concentration of utility lines in the same area, thus concentrating the visual impacts. However, utility lines developed in areas where they did not previously exist would introduce contrast to the landscape in form, line, color, and texture.

Under Alternative B, the entire D-E NCA would be managed as ROW exclusion, which would protect scenic resources by prohibiting new transmission lines, pipelines, access roads, and communication facilities. Under Alternative C, the entire D-E NCA would be managed as a ROW exclusion. Under Alternative D, 90,290 acres would be managed as a ROW exclusion, and the remainder of the D-E NCA would be managed as a ROW avoidance area. Finally, under the Proposed Plan Alternative, 208,990 acres would be managed as a ROW exclusion, and a 1,022-acre corridor along Highways 50 and 141 would be managed as a ROW avoidance area. Depending upon their location, ROW exclusion and avoidance areas could be subject to linear disturbances; however, they would be required to meet VRM Class I or II objectives.

Under Alternatives C, D, and the Proposed Plan Alternative, one new communication site could be permitted in Delta or Montrose County. Because the new communication site would be required to meet VRM II objectives, no impact would be anticipated. If the proposed communication site is not consistent with VRM II objectives, the RMP would be amended to change the VRM class for the area where the communication site would be constructed.

In addition to a new communication site in Delta or Montrose County, new towers could be constructed at the Ninemile Hill communication site under Alternatives C, D, and the Proposed Plan Alternative. The new towers would be collocated with the existing facility so impacts from cultural modifications to scenic quality would be negligible.

Finally, Alternatives C and D would allow telephone and fiber optic lines and power lines in the Unaweep Canyon utility corridor. If new facilities are required, they would be placed on wooden poles and would introduce contrast to form, line, color, and texture of the canyon. If on the canyon rim (under Alternatives C and D), this would be a highly visible intrusion. Under the Proposed Plan Alternative, this corridor is a ROW avoidance area, where these facilities could be allowed if there are no other feasible alternatives and would be subject to mitigation including placing the facilities within the canyon walls, and the facilities could be sited to follow the line of the canyon.

### ***Impacts from Management of Areas of Critical Environmental Concern***

Managing ACECs to protect relevant and important values could have an indirect impact on scenic resources where there is not a scenic value (none of the designated ACECs identified a scenic relevant and important value). Prohibiting surface-disturbing activities and other authorized activities would benefit scenic values by precluding activities that would result in a contrast to the existing landscape.

Under Alternative A, two ACECs, the Gunnison Gravels and Escalante Canyon ACECs, totaling 1,900 acres would be managed to protect relevant and important values. While neither have an identified scenic value, the scenic quality of the area would be indirectly protected by the closure to major utility development.

Under Alternative B, no ACECs would be designated, providing no indirect protection to scenic quality under this alternative.

Under Alternative C, three ACECs (Escalante Canyon, River Rims, and Big Dominguez Canyon), totaling 12,823 acres, would be managed to protect relevant and important values. While none of the ACECs have an identified scenic value, the scenic quality of the area would be incidentally protected by the prohibition of surface-disturbing activities within the Escalante Canyon and River Rims ACECs, protecting scenic quality by precluding activities that would normally introduce contrasts to form, line, color, and texture.

Under Alternative D, four ACECs (Gunnison Gravels, Escalante Canyon, Gibbler Mountain, and Gunnison River), totaling 29,663 acres would be managed to protect relevant and important values. While none of the ACECs have scenic relevant and important values, the scenic quality of the area would be indirectly protected by the prohibition on surface-disturbing activities in the Gunnison Gravels and Gunnison River ACECs and a portion of the Gibbler Mountain ACEC. The prohibition on surface-disturbing activities would protect scenic quality by precluding activities that would normally introduce contrasts to form, line, color, and texture. Within the Escalante Canyon ACEC, unlike Alternatives A (where there would be no restrictions on surface-disturbing activities) and C (where surface-disturbing activities would be prohibited), the area would be subject to SSR restrictions. Site-specific relocation restrictions would allow for certain developments if properly sited to avoid or minimize impacts on the ACEC values. This would provide a lower level of indirect protection to scenic values than the prohibition of surface-disturbing activities proposed under Alternatives A and C.

Under the Proposed Plan Alternative, the Gunnison Gravels, Escalante Canyon, Gibbler Mountain, and River Rims), totaling 9,011 acres, would be managed to protect relevant and important values. Impacts from managing the Gunnison Gravels ACEC and the Gibbler Mountain ACEC would be the same as described under Alternative D. Impacts from managing the Escalante Canyon ACEC would be the same as described under Alternative D but over a smaller area. Impacts from managing the River Rims ACEC would be the same as described under Alternative C but over a larger area.

### ***Impacts from Management of National Trails***

Management of the Old Spanish NHT relies on scenic values as part of its historical integrity. Managing the NHT to support that integrity would provide indirect protection to scenic values. Providing interpretive opportunities, such as kiosks and signs, could introduce contrast in form,

line, color, and texture, depending upon their placement. However, these effects would be localized and small-scale.

Under Alternative A, the BLM does not have specific management related to the Old Spanish NHT.

Under all action alternatives, the BLM would manage the Hunting Ground as the Trail Management Corridor (23,131 acres). Management of the corridor as VRM Class II under Alternatives B, C, and the Proposed Plan Alternative would provide some indirect protection to scenic values within the trail management corridor. Alternative D would manage the corridor as VRM Class I, thus providing direct protection to scenic quality in the corridor between Highway 50 and the rim of the Gunnison River. However, the construction of a non-motorized trail under Alternative D could introduce modifications to the line of the landscape. Other management actions intended to improve the naturalness of the trail management corridor would also provide beneficial impacts on scenic values.

### ***Impacts from Management of Wild and Scenic Rivers***

Under alternatives where stream segments are either eligible or suitable, the BLM would take no action that would damage the identified ORVs, change the tentative classification of the segment, or impair the free-flowing condition of the segment. Along segments with a tentative classification of “wild” (Big Dominguez Creek Segment 1, Little Dominguez Creek Segment 1, Rose Creek, and Cottonwood Creek) and “scenic” (Gunnison River Segment 1, Big Dominguez Creek Segment 2, Little Dominguez Creek Segment 2, and Escalante Creek Segment 1), this management would provide an indirect protection to scenic values, because the segment study area would need to remain in a natural or near-natural state (respectively), thereby precluding surface-disturbing activities that could impact scenic values.

In addition, management of eligible or suitable streams with a scenic ORV (Big Dominguez Creek Segments 1 and 2, Little Dominguez Creek Segments 1 and 2, Rose Creek, and Escalante Creek Segment 1) would provide direct protection to scenic values, because the BLM is obligated to protect the ORVs for which the segments were found eligible. Table 4.42, WSR Segments by Acre, Tentative Classification, and Scenic ORV, shows the WSR study segments, their tentative classification, and whether or not they have a scenic ORV to illustrate which segments would contribute toward the protection of scenic values, either directly or indirectly, where they are found eligible or suitable.

**Table 4.42. WSR Segments by Acre, Tentative Classification, and Scenic ORV**

Segment	Acres on BLM Land	Tentative Classification (Indirect Protection)		Scenic ORV (Direct Protection)
		Wild	Scenic	
<b>Gunnison River Segment 1</b>	4,473		X	
<b>Big Dominguez Creek Segment 1</b>	4,496	X		X
<b>Big Dominguez Creek Segment 2</b>	139		X	X
<b>Little Dominguez Creek Segment 1</b>	3,831	X		X
<b>Little Dominguez Creek Segment 2</b>	632		X	X
<b>Rose Creek</b>	1,175	X		X
<b>Escalante Creek Segment 1</b>	1,819		X	X
<b>Cottonwood Creek</b>	3,729	X		
<i>Note: Management of Gunnison River Segment 3 and Escalante Creek Segment 2 would not provide protection to scenic values as neither have a scenic ORV and both are classified as Recreational. See accompanying text for more detail.</i>				

Gunnison River Segment 3 and Escalante Creek Segment 2 would not provide direct or indirect protection to scenic values as neither have a scenic ORV and neither have a wild or scenic tentative classification. Maintaining the tentative classification of “recreational” along these segments would allow for developments within the segment study corridor.

Under Alternative A, all eligible segments would be managed to protect their tentative classification, free-flowing **condition**, and identified ORVs. In order to protect segments with a tentative classification of “wild” or “scenic,” the BLM would prohibit large-scale developments, trail building, and other actions that would reduce the **tentative** classification from wild or scenic to scenic or recreational. This would indirectly protect the scenic value within the 0.25-mile study corridor of the segments. Outside of those segments, management of eligible streams with a scenic ORV would provide indirect protection to scenic values, because the BLM is obligated to protect the ORVs for which the segments were found eligible. This means that the BLM would not permit any actions that would degrade the scenic ORV along these segments.

Under Alternative B, only a portion of the Gunnison River and Cottonwood Creek would be determined suitable for inclusion in the NWSRS. Management of Cottonwood Creek would provide indirect protection to scenic values as described for Alternative A. The Gunnison River does not contain a scenic ORV, so scenic values would not directly benefit from the management of this segment as suitable. The portion of Gunnison River Segment 1 determined suitable would provide indirect protection to scenic values by maintaining the scenic tentative classification. On the other hand, maintaining the tentative classification of recreational along the portion of Gunnison River Segment 3 determined suitable would allow for developments within the segment study corridor.

Under Alternative C, all eligible segments would be determined suitable for inclusion in the NWSRS and would be managed to protect their tentative classification, free-flowing **condition**, and identified ORVs. Impacts would be the same as those described under Alternative A.

Under Alternative D, all eligible segments would be determined not suitable for inclusion in the NWSRS and would be released from WSR study. As such, visual resources would not receive protection from the management of eligible or suitable segments with a tentative classification of wild or scenic or those with a scenic ORV.

Except for Alternative D, the Proposed Plan Alternative would provide the least amount of protection to scenic values from WSR management. Only Cottonwood Creek would be determined suitable for inclusion in the NWSRS. Management of Cottonwood Creek would provide indirect protection to scenic values as described for Alternative A.

### ***Impacts from Management of Wilderness Study Areas***

Managing the Dominguez Canyon WSA would protect visual resources in the area both directly and indirectly. All activities must meet the non-impairment standard described in BLM Manual 6330, *Management of Wilderness Study Areas* (BLM 2012e). The potential for less than negligible impacts on visual resources are from valid existing rights and grandfathered uses, in this case, livestock grazing. Impacts from livestock grazing are discussed under Impacts from Management of Livestock Grazing.

Under all alternatives, the Dominguez Canyon WSA would be managed according to VRM Class I objectives to preserve the existing character of the landscape, providing direct protection to visual resources in the WSA.

## Summary of Impacts from Alternatives

Alternative A provides the least amount of protection from adverse impacts on scenic values within the D-E NCA. Nearly half of the lands would be managed according to VRM Class III objectives, including 81,629 acres of high sensitivity landscapes and 4,857 acres of scenic quality “A” landscapes, allowing modifications to the landscape that attract attention but do not dominate the view of the casual observer.

Alternatives B, C, D, and the Proposed Plan Alternative provide a similar level of protection for scenic values within the D-E NCA by managing all lands according to either VRM Class I or II objectives. Alternative B would protect the most lands from adverse impacts by managing approximately 45 percent of the D-E NCA as VRM Class I and an additional 24 percent of VRM Class II lands would prohibit surface-disturbing activities that might otherwise cause visual intrusions on the landscape. Of the lands managed as VRM Class II, 94,846 acres (82 percent) are high sensitivity landscapes and 8,314 acres (7 percent) have a scenic quality ranking of “A.”

Under Alternative C, approximately 34 percent of the D-E NCA would be managed as VRM Class I and an additional 27 percent of VRM Class II lands would prohibit surface-disturbing activities that might otherwise cause visual intrusions on the landscape. Of the lands managed as VRM Class II, 115,257 acres (84 percent) are high sensitivity landscapes and 13,302 acres (10 percent) have a scenic quality ranking of “A.”

Alternative D would protect the most lands as VRM Class I (51 percent) and would protect an additional 10 percent of VRM Class II lands by prohibiting surface-disturbing activities that might otherwise cause visual intrusions on the landscape. Of the lands managed as VRM Class II, 91,690 acres (90 percent) are high sensitivity landscapes and 3,747 acres (4 percent) have a scenic quality ranking of “A.”

Under the Proposed Plan Alternative, approximately 40 percent of the D-E NCA would be managed as VRM Class I and an additional 19 percent of VRM Class II lands would prohibit surface-disturbing activities that might otherwise cause adverse impacts. This combination provides the least amount of protection to scenic values of any of the action alternatives, although the entire NCA will be managed for either VRM Class I or II objectives, which would protect the scenic quality of the D-E NCA. Of the lands managed as VRM Class II, 105,458 acres (83 percent) are high sensitivity landscapes and 13,737 acres (11 percent) have a scenic quality ranking of “A.”

## Cumulative Impacts

The CIAA for visual resources is the planning area and the viewshed extending beyond the planning area.

Past and present actions within the CIAA that have affected visual resources include wildfires, timber harvesting, cross-country travel outside of the Dominguez Canyon Wilderness and WSA, development associated with recreation, range improvements for livestock and wildlife habitat, and noxious and invasive weed invasion, all of which have introduced modifications to the landscape.

Because of the management within the D-E NCA requiring landscape modifications to retain the existing character of the landscape and because the planning area is predominately BLM-administered land, actions likely to have the greatest future effect on visual resources are

development activities within the viewshed of but occurring outside of the D-E NCA, which could affect the high sensitivity landscapes, including utility development along Highways 50 or 141. In addition, increasing recreation use, within and surrounding the D-E NCA, due to rising population and visitor levels in the area could affect visual resources through trampling vegetation, hardening trails, and spreading litter, particularly where concentrated recreation use occurs.

The final Colorado Roadless Rule identified the Kelso Mesa and Dominguez Colorado Roadless Areas in the Uncompahgre National Forest to the west of the D-E NCA (77 FR 39576–39612, 3 July 2012). The rule conserves roadless area characteristics by prohibiting tree cutting, sale, or removal; road construction and reconstruction; and linear construction zones, with some limited exceptions. This adjacent management would help protect the sensitive landscapes within the D-E NCA by restricting activities that would otherwise introduce contrast to the landscape.

Furthermore, an area to the south of the D-E NCA within the Uncompahgre Field Office, known as Monitor and Potter Canyons, has been found to contain wilderness characteristics (BLM 2011b) and management to protect those characteristics will be considered in the in-progress Uncompahgre RMP revision. While the lands with wilderness characteristics are not immediately adjacent to the D-E NCA, they are close enough that the viewshed would be protected.

In summary, because of the limited amount of non-BLM land within the planning area and the protections or potential protections afforded to lands adjacent to the planning area, opportunities for cumulative impacts on scenic values within the D-E NCA would be limited.

### **4.3.7. Air Resources, Including Climate Change**

This section addresses the potential effects of emissions of air pollutants from specific activities authorized, allowed, or conducted by the BLM under each alternative within the planning area. Existing conditions are described in section 3.2.7, Air Resources.

#### **Methods of Analysis**

Air resources in the D-E NCA were evaluated to determine how air quality could be affected by future Federal actions implemented under this Proposed RMP.

The air resource impact analysis compared existing emissions levels and air quality conditions to estimated future emissions for each alternative on the basis of predicted rates of growth and decline and the potential for impacts on future air quality conditions. The purpose of conducting the emissions-based analysis was to evaluate the magnitude of emissions of each pollutant from BLM authorized activities to identify the potential for those emissions to cause adverse impacts on air quality in the context of existing air quality conditions. By identifying those activities with significant estimated emissions, the BLM can focus its air resource management efforts effectively. The emissions based analysis was also used to evaluate increases in emissions from each activity over a base year for each alternative. This information is useful for evaluating the effect of various management actions on air emissions and for evaluating the effect of emission control strategies. This information is ultimately used to inform the selection of effective resource management actions under this RMP. This approach included the following steps:

1. Evaluating existing air quality conditions on the basis of available air monitoring data and identifying air quality issues (See section 3.2.7, Air Resources)

2. Identifying management actions and activities authorized, permitted, or allowed by the BLM within the planning area that generate air pollutant emissions
3. Compiling base year operational and production data for each identified emission generating activity (See section 3.2.7, Air Resources)
4. Compiling projected future development, operational, and production data for each identified emission generating activity for the selected future years over the life of the plan (Year 10 and Year 20); Year 10 and Year 20 were selected for future year scenarios as these years represent the halfway point and final state of the environment relative to the expected useful life of the RMP
5. Calculating estimated current and projected future emissions of specific air pollutants for identified management actions and activities for each alternative and compiling the calculations in an emissions inventory (Appendix P)
6. Analyzing the magnitude of predicted emissions for each activity and changes in estimated emissions over the base year and between alternatives to determine the potential for future impacts on air quality
7. Evaluating increases in estimated emissions from future BLM actions in the context of potential cumulative emissions within the planning area over the life of the plan
8. Evaluating the effect of restrictions and control measures imposed under each alternative

All parameters used to estimate emissions for proposed emission sources were obtained from D-E NCA Field Office staff and from any NEPA analyses currently being conducted for BLM actions within the planning area. Emission factors used to estimate proposed emissions were obtained primarily from EPA's AP-42 *Compilation of Air Pollutant Emission Factors* (EPA 1995), NONROAD2008a emissions model (<http://www.epa.gov/otaq/nonrdmdl.htm#model>), and MOVES2010a Motor Vehicle Emission Simulator (<http://www.epa.gov/otaq/models/moves/moves-archive.htm>). Given the uncertainties concerning the number, nature, and specific location of future emission sources and activities, the emission comparison approach provides an appropriate basis to compare the potential impacts under the various alternatives, but it may not represent actual future emissions.

### ***Indicators***

The following were identified as being air pollutants that could potentially be emitted by management actions and activities authorized, permitted, allowed, or performed under this RMP. Emissions of each of these pollutants were estimated for each identified activity and addressed for each alternative in this analysis.

- Carbon monoxide (CO)
- Nitrogen oxides (NO<sub>x</sub>)
- Particulate matter less than or equal to 10 microns in diameter (PM<sub>10</sub>)
- Particulate matter less than or equal to 2.5 microns in diameter (PM<sub>2.5</sub>)
- Sulfur dioxide (SO<sub>2</sub>)



- Volatile organic compounds (VOCs)
- Hazardous air pollutants (HAPs)
- Greenhouse gases: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O)

### *Assumptions*

Major assumptions used in this impact analysis include the following:

- Emission estimates are derived from base year estimates, as well as predictions of future emissions from BLM authorized activities based upon the management outlined in Chapter 2 of this document.
- Where opportunities are available for OHV use in the D-E NCA, this use can be expected to increase at a rate of 3 percent per year.
- Livestock grazing levels of use would remain stable over the life of the RMP.
- While greenhouse gas emissions have been quantified for some resource uses, it is not possible to correlate specific consequences to these emissions. The assessment of GHG emissions and climate change is extremely complex because of the inherent interrelationships among its sources, causation, mechanisms of action, and impacts. Given the global and complex nature of climate change, it is not currently possible to link projected GHG emissions associated with any particular activity to specific environmental impacts at a specific site or location.

Emissions from the following management actions were not estimated, because 1) the level of activity is not expected to change between alternatives, *and* 2) the magnitude of emissions from the activity is considered to be very small in comparison to other management activities, or 3) sufficient operational or production data were not available to reliably quantify emissions: geological and paleontological resources, priority species and vegetation, special status species and natural communities, non-special status fish and wildlife, noxious *and* invasive weeds, fire and fuels, soils and water quality, cultural resources, wilderness, lands with wilderness characteristics, scenic resources, scientific use, educational use, land tenure and land use authorizations, ACECs, national trails and backcountry byways, wild and scenic rivers, wilderness study areas, watchable wildlife areas.

### **Direct and Indirect Impacts**

Air quality impacts can include changes in air pollutant concentrations, changes in visibility, impacts on soils and vegetation from atmospheric deposition, and changes in lake chemistry. Several key factors play a role in determining the severity of these impacts such as the magnitude and chemistry of the air emissions, meteorological conditions, and topography. Emissions were quantified for several different emissions generating activities for each of the alternatives as an indication of the potential magnitude of impacts on air quality from each alternative. Increases in potential emissions from the base year were also evaluated. All of the alternatives result in changes to emissions of air pollutants relative to the base year and will therefore have the potential to both improve and degrade air quality depending on the pollutant. For this analysis, the magnitude of the change in emissions was analyzed to determine if the impacts on air quality have the potential to be significant.

Actions that initiate or increase emissions of air pollutants can result in negative effects on air resources, including increased concentrations of air pollutants, decreased visibility, increased atmospheric deposition on soils and vegetation and acidification of sensitive water bodies. Actions that reduce or control emissions of air pollutants can be very effective at improving air quality and preventing degradation.

The following list of emission-generating activities were identified as those management actions and activities authorized, permitted, allowed, or performed under this RMP that could potentially emit regulated air pollutants and could potentially cause impacts on air quality within the planning area and to Class I areas within 100 kilometers of the planning area:

- Livestock grazing
- Recreation
- Comprehensive travel and transportation management

Although emissions for vegetation management and fuel and fire treatments have not been quantified, these management actions would result in short-term emissions of criteria pollutants and greenhouse gas emissions. Fuel and fire treatments could also generate hazardous air pollutants associated with vegetation removal, including emissions from equipment used in mechanical and chemical treatments, and prescribed burns.

Depending on their size, wildfires could also be a substantial source of emissions that affect regional air quality conditions. Fires can emit large quantities of carbon monoxide, nitrogen oxides, sulfur oxides, and organic compounds, as well as carbon dioxide. In general, actions to improve resources described under PPSV would have a short-term adverse impact on air quality. However, these actions would have a positive air quality impact over the long term by limiting such uses as grazing or developing new routes in these areas and from improving land health. Given the dispersed nature or uncertain timing of actions related to PPSV, emissions were not quantified.

Emissions from recreation are the major contributor to total estimated criteria pollutant emissions under all alternatives. For GHG pollutants, grazing was the major contributor of emissions on a CO<sub>2</sub>e basis. It is important to note that these emissions numbers should not be considered definitive. Actual emissions may vary in future years, but from a planning perspective the methods for derivation and the resulting magnitude of estimated emissions is reasonable to determine the potential to cause impacts on air quality under each of the alternatives. For additional information on the emissions inventory please refer to Appendix P.

For all alternatives considered by this analysis, the magnitude of the changes in emissions is insufficient to have the potential to cause significant impacts on air quality within or adjacent to the planning area. The primary pollutant of concern as identified by this analysis is PM<sub>10</sub>, almost exclusively from fugitive dust. With respect to federally designated Class I areas, three are located within 100 km of the planning area, including Black Canyon of the Gunnison Wilderness (40 km), West Elk Wilderness (64 km), and Maroon Bells-Snowmass Wilderness (100 km). For all of the alternatives, the magnitude of the PM<sub>10</sub> emissions predicted is insufficient to have the potential to impact Air Quality Related Values (AQRVs) (i.e., visibility and atmospheric deposition) within these areas. More than other pollutants, fugitive dust is considered to be a localized pollutant rather than a regional scale pollutant.

In all cases emissions from each alternative considered is insignificant in terms of total annual GHG emissions (per CEQ guidelines), and potential impacts caused by the accumulation of these emissions in the atmosphere. GHG emissions impacts are discussed in more detail within the cumulative section below.

### ***Impacts from Management of Air Resources***

Use of BMPs (Appendix J) and mitigation measures can be used to minimize impacts on air quality from BLM authorized activities. Under all alternatives, the BLM would ensure that the air quality within the D-E NCA meets State and Federal air quality standards and regulations. Under Alternative C, the BLM would implement BMPs to reduce small particulate pollutions resulting from management actions.

### ***Impacts from Management of Recreation***

Emissions generating activities associated with this category include fugitive dust and combustion emissions from OHV use. Estimated emissions from these activities were calculated on the basis of visitors per year and an estimated vehicle miles traveled per visit for recreational OHV use, including ATVs, dirt motorcycles, Jeeps, and snowmobiles (see Tables 4.43 and 4.44 below).

Given the low release heights associated with OHVs and the dispersed nature of the area source (both spatially and temporally), emissions from OHV activity are not expected to be of significant quantities within the boundary layer of the atmosphere to sustain long range transport and impact any of the Class I areas above.

With the exception of Alternative C, the estimated emissions of PM<sub>10</sub> from recreational activities are predicted to increase over time for all the alternatives over the life of the plan.

**Table 4.43. Criteria Pollutant Emissions from Recreation**

Alternative	VOC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	HAPs
A - Year 10	21.0	52.2	0.7	181.4	18.5	0.0	2.1
A - Year 20	25.6	63.6	0.8	221.1	22.6	0.0	2.6
B - Year 10	21.0	52.2	0.7	181.4	18.5	0.0	2.1
B - Year 20	25.6	63.6	0.8	221.1	22.6	0.0	2.6
C - Year 10	8.2	20.4	0.3	70.9	7.2	0.0	0.8
C - Year 20	8.2	20.4	0.3	70.9	7.2	0.0	0.8
D - Year 10	21.0	52.2	0.7	181.4	18.5	0.0	2.1
D - Year 20	25.6	63.6	0.8	221.1	22.6	0.0	2.6
PPA <sup>a</sup> - Year 10	21.0	52.2	0.7	181.4	18.5	0.0	2.1
PPA <sup>a</sup> - Year 20	25.6	63.6	0.8	221.1	22.6	0.0	2.6

<sup>a</sup>Proposed Plan Alternative

**Table 4.44. GHG Pollutant Emissions from Recreation**

Alternative	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e	CO <sub>2</sub> e (tonnes)
A - Year 10	284.8	0.3	0.0110	295	268
A - Year 20	347.1	0.4	0.0133	359	326
B - Year 10	284.8	0.3	0.0110	295	268
B - Year 20	347.1	0.4	0.0133	359	326
C - Year 10	111.2	0.1	0.0043	115	105
C - Year 20	111.2	0.1	0.0043	115	105
D - Year 10	284.8	0.3	0.0110	295	268

Alternative	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e	CO <sub>2</sub> e (tonnes)
D - Year 20	347.1	0.4	0.0133	359	326
PPA <sup>a</sup> - Year 10	284.8	0.3	0.0110	295	268
PPA <sup>a</sup> - Year 20	347.1	0.4	0.0133	359	326

### ***Impacts from Management of Livestock Grazing***

Emission-generating activities associated with this category primarily include construction activities in support of grazing operations as well as methane emissions from enteric fermentation in livestock and manure decomposition (see Tables 4.45 and 4.46 below). Construction and maintenance of reservoirs, springs, wells, pipelines, and fences generate fugitive dust emissions and combustion emissions from construction equipment. Estimated emissions are based on AUMs from cattle grazing permits. Levels of grazing use are expected to stay consistent over the life of the plan once the management prescriptions in Chapter 2 have been implemented. The magnitude of estimated criteria and GHG emissions for this category are predicted to be very low under this alternative and are not expected to contribute to significant air quality and climate change impacts. This category is the NCA's biggest source of such emissions, but its impacts are still negligible compared to the impacts from the larger region.

Estimated emissions from the non-GHG portions of livestock grazing have very little potential to contribute to air quality impacts due to their exceedingly small quantities and negligible changes from the base year emissions rates.

With the exception of Alternative B, the estimated emissions of GHGs from livestock grazing activities are predicted to remain relatively stable to the base year for all the alternatives over the life of the plan. Alternative B provides for an approximately 30 percent decrease in emissions by limiting the allocation of available AUMs, thereby reducing the number of livestock within the D-E NCA, compared to Alternative A.

**Table 4.45. Criteria Pollutant Emissions from Livestock Grazing**

Alternative	VOC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	HAPs
A - Year 10	0.0	0.3	0.1	0.5	0.1	0.0	0.0
A - Year 20	0.0	0.3	0.1	0.5	0.1	0.0	0.0
B - Year 10	0.0	0.2	0.1	0.3	0.0	0.0	0.0
B - Year 20	0.0	0.2	0.1	0.3	0.0	0.0	0.0
C - Year 10	0.0	0.3	0.1	0.5	0.1	0.0	0.0
C - Year 20	0.0	0.3	0.1	0.5	0.1	0.0	0.0
D - Year 10	0.0	0.3	0.1	0.5	0.1	0.0	0.0
D - Year 20	0.0	0.3	0.1	0.5	0.1	0.0	0.0
PPA <sup>a</sup> - Year 10	0.0	0.3	0.1	0.5	0.1	0.0	0.0
PPA <sup>a</sup> - Year 20	0.0	0.3	0.1	0.5	0.1	0.0	0.0

**Table 4.46. GHG Pollutant Emissions from Livestock Grazing**

Alternative	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e	CO <sub>2</sub> e (tonnes)
A - Year 10	19.0	737.0	0.0007	15,497	14,063
A - Year 20	19.0	737.0	0.0007	15,497	14,063
B - Year 10	13.3	513.5	0.0005	10,796	9,797
B - Year 20	13.3	513.5	0.0005	10,796	9,797
C - Year 10	18.8	725.9	0.0006	15,262	13,850
C - Year 20	18.8	725.9	0.0006	15,262	13,850
D - Year 10	19.1	737.7	0.0007	15,511	14,075

Alternative	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e	CO <sub>2</sub> e (tonnes)
<b>D - Year 20</b>	19.1	737.7	0.0007	15,511	14,075
<b>PPA<sup>a</sup> - Year 10</b>	18.8	728.9	0.0006	15,326	13,907
<b>PPA<sup>a</sup> - Year 20</b>	18.8	728.9	0.0006	15,326	13,907

### ***Impacts from Management of Transportation and Travel***

Emissions generating activities associated with this category include fugitive dust and combustion emissions from recreational road construction and maintenance equipment (Tables 4.47 and 4.48). The magnitude of estimated criteria and GHG emissions from this category are predicted to be very low for this alternative and are not expected to contribute to significant air quality and climate change impacts.

Estimated emissions from travel and transportation management have very little potential to contribute to air quality impacts due to their exceedingly small quantities and negligible changes from the base year emissions rates.

**Table 4.47. Criteria Pollutant Emissions from Travel and Transportation Management**

Alternative	VOC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	HAPs
<b>A - Year 10</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>A - Year 20</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>B - Year 10</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>B - Year 20</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>C - Year 10</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>C - Year 20</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>D - Year 10</b>	0.0	0.0	0.0	0.1	0.0	0.0	0.0
<b>D - Year 20</b>	0.0	0.0	0.0	0.1	0.0	0.0	0.0
<b>PPA<sup>a</sup> - Year 10</b>	0.0	0.0	0.0	0.1	0.0	0.0	0.0
<b>PPA<sup>a</sup> - Year 20</b>	0.0	0.0	0.0	0.1	0.0	0.0	0.0

**Table 4.48. GHG Pollutant Emissions from Travel and Transportation Management**

Alternative	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e	CO <sub>2</sub> e (tonnes)
<b>A - Year 10</b>	1.5	0.0	0.0000	1.5	1.4
<b>A - Year 20</b>	1.5	0.0	0.0000	1.5	1.4
<b>B - Year 10</b>	1.5	0.0	0.0000	1.5	1.4
<b>B - Year 20</b>	1.5	0.0	0.0000	1.5	1.4
<b>C - Year 10</b>	1.5	0.0	0.0000	1.5	1.4
<b>C - Year 20</b>	1.5	0.0	0.0000	1.5	1.4
<b>D - Year 10</b>	3.1	0.0	0.0000	3.1	2.8
<b>D - Year 20</b>	3.1	0.0	0.0000	3.1	2.8
<b>PPA<sup>a</sup> - Year 10</b>	3.1	0.0	0.0000	3.1	2.8
<b>PPA<sup>a</sup> - Year 20</b>	3.1	0.0	0.0000	3.1	2.8

### **Summary of Impacts from Alternatives**

Estimated emissions for Alternative A (No Action Alternative) increase from the base year for all pollutants except methane. This can be attributed to the predicted growth of 3 percent per year in OHV recreation activities associated with the management decisions of the plan. Tables 4.49 and 4.50 below show the estimated emissions for each pollutant from each emission generating activity analyzed for Alternative A in Project Year 10 and 20, respectively.

Total criteria emissions for Alternative B are estimated to be essentially the same as those for Alternative A, while GHG emissions are cut by almost a third due to more restrictive grazing decisions. The tables below show the estimated emissions for each pollutant from each emission generating activity analyzed for Alternative B in Project Year 10 and 20, respectively.

Total criteria emissions for Alternative C decrease considerably due to estimated reductions in OHV usage, which make up a majority of the criteria pollutant emissions in all alternatives. GHG emissions are cut slightly due to minor restrictions within grazing allotments. The tables below show the estimated emissions for each pollutant from each emission—generating activity analyzed for Alternative C in project year 10 and 20, respectively.

Total criteria emissions for Alternative D are consistent with the resource impact decisions made for Alternative A. While the BLM estimates increased OHV usage in the Cactus Park and Ninemile Hill SRMAs in this alternative, this increased usage would offset decreased usage in other parts of the D-E NCA that would be managed for non-OHV recreation. GHG emissions increase slightly due to minor changes to grazing allotments. The tables below show the estimated emissions for each pollutant from each emission generating activity analyzed for Alternative D in Project Year 10 and 20, respectively.

Total criteria emissions for the Proposed Plan Alternative are consistent with the resource impact decisions made for Alternative A. GHG emissions are cut slightly due to minor restrictions within grazing allotments.

**Table 4.49. Total Criteria Pollutant Emissions for Each Alternative**

Alternative	VOC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	HAPs
A - Year 10	21.1	52.5	0.8	181.9	18.6	0.0	2.1
A - Year 20	25.7	63.9	0.9	221.6	22.7	0.0	2.6
B - Year 10	21.1	52.4	0.8	181.7	18.6	0.0	2.1
B - Year 20	25.7	63.8	0.9	221.4	22.6	0.0	2.6
C - Year 10	8.2	20.7	0.4	71.3	7.3	0.0	0.8
C - Year 20	8.2	20.7	0.4	71.3	7.3	0.0	0.8
D - Year 10	21.1	52.5	0.8	181.9	18.6	0.0	2.1
D - Year 20	25.7	63.9	0.9	221.6	22.7	0.0	2.6
PPA <sup>a</sup> - Year 10	21.1	52.5	0.8	181.9	18.6	0.0	2.1
PPA <sup>a</sup> - Year 20	25.7	63.9	0.9	221.6	22.7	0.0	2.6

**Table 4.50. Total GHG Pollutant Emissions for Each Alternative**

Alternative	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e	CO <sub>2</sub> e (tonnes)
A - Year 10	305.4	737.4	0.0	15,793.4	14,331.6
A - Year 20	367.6	737.4	0.0	15,857.9	14,390.1
B - Year 10	299.6	513.8	0.0	11,092.6	10,065.9
B - Year 20	361.9	513.9	0.0	11,157.1	10,124.4
C - Year 10	131.5	726.0	0.0	15,379.2	13,955.7
C - Year 20	131.5	726.0	0.0	15,379.2	13,955.7
D - Year 10	306.9	738.0	0.0	15,809.0	14,345.7
D - Year 20	369.2	738.1	0.0	15,873.5	14,404.2
PPA <sup>a</sup> - Year 10	306.7	729.2	0.0	15,623.9	14,177.8
PPA <sup>a</sup> - Year 20	369.0	729.3	0.0	15,688.4	14,236.3

## Cumulative Impacts

### Criteria Pollutants

As discussed in the previous sections, this analysis identified PM<sub>10</sub> as the primary pollutant of concern. The other criteria emissions are too small to warrant any further analysis, and therefore the cumulative impacts discussion will be limited to PM<sub>10</sub>. Further, since PM<sub>10</sub> is a local rather than a regional pollutant, the discussion will be limited to activities occurring within the planning area boundaries. Because of the limited use nature of the D-E NCA, only those activities described above were identified as authorized activities that would occur cumulatively within the planning area, and thus the cumulative emissions inventory for each alternative would be exactly the same as those above (i.e., no other BLM or external entity activities have been identified that would emit a pollutant of concern in or immediately adjacent to the planning area boundary).

The cumulative analysis will focus on comparing the magnitude of the planning area emissions estimates to the summed emissions for both Delta and Mesa Counties. The D-E NCA area straddles both counties, and comparing the emissions on a relative basis can provide a simplified methodology for determining the potential significance of BLM actions on a mass basis. The most recent emissions inventory available for both counties was compiled for 2008 actual emissions. The 2008 emissions data for Delta and Mesa Counties were obtained from EPA's National Emissions Inventory (NEI) (<http://www.epa.gov/ttnchie1/net/2011inventory.html>). In Table 4.51, emissions estimates are shown for total PM<sub>10</sub> emissions from all source categories and fugitive dust emissions. In theory, the D-E NCA emissions for the base year would be included as a portion of each county's NEI data. The basis for this assumption is supported by the 2008 NEI v2 calculation methodology for the applicable PM<sub>10</sub> dust source categories, which relied on State data and the NONROAD (NR) models (run within the National Mobile Inventory Model (NMIM)). It is unclear exactly how the models were used to produce dust emissions estimates, but the BLM assumes EPA's methodology is sound, thorough, and inclusive of existing conditions at the time the estimates were made.

Cumulative impacts on air quality are anticipated to be the least under Alternative C due to proposed recreation management actions, primarily due to anticipated reductions in OHV usage under this alternative. Cumulative estimated emissions changes under alternatives A, B, D, and the Proposed Plan Alternative are similar and should not result in air quality impacts for the reasons discussed in the previous section.

**Table 4.51. Total Criteria Pollutant Emissions for Each Alternative Compared to Three-County Area**

Alternative	VOC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	HAPs
<b>Three-County Area</b>	7,399	61,065	12,542	11,649	3,690	4,268	9,633
<b>A - Year 10</b>	21.1	52.5	0.8	181.9	18.6	0.0	2.1
<b>A - Year 20</b>	25.7	63.9	0.9	221.6	22.7	0.0	2.6
<b>B - Year 10</b>	21.1	52.4	0.8	181.7	18.6	0.0	2.1
<b>B - Year 20</b>	25.7	63.8	0.9	221.4	22.6	0.0	2.6
<b>C - Year 10</b>	8.2	20.7	0.4	71.3	7.3	0.0	0.8
<b>C - Year 20</b>	8.2	20.7	0.4	71.3	7.3	0.0	0.8
<b>D - Year 10</b>	21.1	52.5	0.8	181.9	18.6	0.0	2.1
<b>D - Year 20</b>	25.7	63.9	0.9	221.6	22.7	0.0	2.6
<b>PPA<sup>a</sup> - Year 10</b>	21.1	52.5	0.8	181.9	18.6	0.0	2.1
<b>PPA<sup>a</sup> - Year 20</b>	25.7	63.9	0.9	221.6	22.7	0.0	2.6

### ***Greenhouse Gases and Climate Change***

Concentrations of certain gases in the earth's atmosphere have been identified as being effective at trapping heat reflected off the earth's surface, thereby creating a "greenhouse effect." As concentrations of these greenhouse gases (GHGs) increase, the earth's surface warms, the composition of the atmosphere changes, and global climate is affected. Concentrations of greenhouse gases have increased dramatically in the earth's atmosphere in the past century. Anthropogenic (man-made) sources and human activities have been attributed to these increases particularly for carbon dioxide, methane, nitrous oxide, and fluorinated gases (<http://www.epa.gov/otaq/models/moves/moves-archive.htm>).

The EPA has determined that six GHGs are air pollutants and subject to regulation under the Clean Air Act: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Of these GHGs, carbon dioxide, methane, and nitrous oxide are commonly emitted by the types of activities included in this analysis, while the remaining three GHGs are emitted in extremely small quantities or are not emitted at all. Greenhouse gas emissions from management actions and activities were estimated for each alternative in this analysis for the following pollutants:

- Carbon dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous oxide (N<sub>2</sub>O)

A GHG's ability to contribute to global warming is based on its longevity in the atmosphere and its heat trapping capacity. In order to aggregate GHG emissions and assess their contribution to climate change, the EPA has assigned each GHG a global warming potential (GWP) that is used to calculate carbon dioxide equivalents (CO<sub>2</sub>e). The CO<sub>2</sub>e for each GHG is calculated by multiplying the quantity of emissions by the GWP for that GHG. Total CO<sub>2</sub>e emissions for all GHGs are then determined by adding the CO<sub>2</sub>e emissions of each GHG. GWPs used for GHG emission calculations and reporting are CO<sub>2</sub> = 1, CH<sub>4</sub> = 25, and N<sub>2</sub>O = 310. CO<sub>2</sub>e were then converted to metric tonnes (Mt), a typical reporting unit for GHG emissions. This analysis quantified emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O from the same management actions and activities for each alternative as was done for the criteria pollutants (included in the above tables of alternatives).

GHG emissions are estimated to remain stable for all alternatives compared to base year emissions, with the exception of Alternative B. Alternatives B show decreases under the base year by approximately 30 percent in the short term and the long term. Other slight increases and decreases relative to the base year are negligible for all the other alternatives. The majority share of the GHG emissions for each alternative result from livestock grazing, specifically from methane emissions (on a CO<sub>2</sub>e basis).

Table 4.52 below compares GHG emissions from BLM actions for each of the alternatives to the EPA's 2008 NEI GHG estimates for Delta, Mesa, and Montrose Counties. GHG emissions estimated for each of the alternatives comprise between 0.9 percent and 1.2 percent of the combined county GHG emissions relative to 2008. The Colorado Department of Public Health and Environment (CDPHE) used the EPA's State Inventory Tool to estimate future years' GHG emission inventories for Colorado. In year 2020, it is estimated that Colorado's annual GHG emissions will be approximately 126,060,000 metric tons CO<sub>2</sub>(e). Annual GHG emissions



estimated for the alternatives would represent approximately 0.01 percent of Colorado's year 2020 annual GHG emission levels.

**Table 4.52. Total GHG Pollutant Emissions for Each Alternative Compared to Three-County Area Emissions**

Alternative	CO <sub>2</sub> (tons)	CH <sub>4</sub> (tons)	N <sub>2</sub> O (tons)	CO <sub>2</sub> e (tons)	CO <sub>2</sub> e (tonnes)
<b>Three-County Area</b>	1,270,339	335	12	1,281,233	1,162,643
<b>A - Year 10</b>	305	737	0.0	15,793	14,332
<b>A - Year 20</b>	368	737	0.0	15,858	14,390
<b>B - Year 10</b>	300	514	0.0	11,093	10,066
<b>B - Year 20</b>	362	514	0.0	11,157	10,124
<b>C - Year 10</b>	132	726	0.0	15,379	13,956
<b>C - Year 20</b>	132	726	0.0	15,379	13,956
<b>D - Year 10</b>	307	738	0.0	15,809	14,346
<b>D - Year 20</b>	369	738	0.0	15,873	14,404
<b>PPA<sup>a</sup> - Year 10</b>	307	729	0.0	15,624	14,178
<b>PPA<sup>a</sup> - Year 20</b>	369	729	0.0	15,688	14,236

Several activities on BLM-administered lands contribute to the phenomena of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildfires, livestock grazing (methane), and other activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over different temporal scales. For example, recent emissions of carbon dioxide can influence climate for 100 years.

It may be difficult to discern whether global climate change is already affecting resources in the analysis area of the plan. It is important to note that projected changes are likely to occur over several decades to a century. Therefore, many of the projected changes associated with climate change may not be measurably discernible within the reasonably foreseeable future. Existing climate prediction models are global or continental in scale; therefore they are not appropriate to estimate potential impacts of climate change on the planning area. The current state of the science involves calculating potential quantities of greenhouse gases that may be added to the atmosphere from a particular activity. However, tools to analyze or predict how global or regional climate systems may be affected by a particular activity or activities within the planning area are not currently available. Assessing the impacts of GHG emissions on global climate change requires modeling on a global scale, which is beyond the scope of this analysis. Potential impacts on climate change are influenced by GHG emission sources from around the globe and it is not possible to distinguish the impacts on global climate change from GHG emissions originating from the planning area.

Even though it is not possible to link a single source or group of sources to specific predicted impacts associated with climate change, the following predictions for the region have been generally accepted as reasonable outcomes on the basis of the current state of climate change science (as identified by the EPA for the Mountain West and Great Plains region):

- The region will experience warmer temperatures with less snowfall.
- Temperatures are expected to increase more in winter than in summer, more at night than in the day, and more in the mountains than at lower elevations.

- Earlier snowmelt means that peak stream flow will be earlier, weeks before the peak needs of ranchers, farmers, recreationists, and others. In late summer, rivers, lakes, and reservoirs will be drier.
- More frequent, more severe, and possibly longer-lasting droughts will occur.
- Crop and livestock production patterns could shift northward; less soil moisture due to increased evaporation may increase irrigation needs.
- Drier conditions will reduce the range and health of ponderosa and lodge pole pine forests, and increase the susceptibility to fire.
- Grasslands and rangelands could expand into previously forested areas.
- Ecosystems will be stressed and wildlife such as the mountain lion, black bear, long-nose sucker, marten, and bald eagle could be further stressed.

The potential impacts of climate change on specific resources within the D-E NCA are described in the cumulative impact sections for those resources: vegetation (section 4.2.2.1), noxious and invasive weeds (section 4.2.2.4), wildlife (sections 4.2.2.2 and 4.2.2.3), fire and fuels (section 4.2.2.5), water and soil (section 4.2.2.6), and cultural resources (section 4.2.3).

Management actions proposed in the RMP include measures that address the effects of climate change on sensitive resources within the planning area. These are mechanisms for adaptive management, high levels of protection for large areas of the landscape, and an emphasis on attaining multiple biological goals through managing for well-defined habitat parameters (see section 4.2.2.1, Priority Species and Vegetation). These actions would help mitigate the effects of climate change by promoting connected landscapes, facilitating migration, maintaining genetic diversity, and promoting species diversity.

## 4.4. Resource Uses

This section contains a description of the human uses of resources in the D-E NCA planning area and follows the order of topics addressed in Chapter 3. The purposes for which the D-E NCA was designated are discussed first, followed by other resources:

- Recreation (D-E NCA purpose);
- Scientific use (D-E NCA purpose);
- Educational use (D-E NCA purpose);
- Livestock grazing;
- Transportation and travel management; and
- Land tenure and land use authorizations.

### **4.4.1. Recreational Use**

This section discusses impacts on recreational resources from proposed management actions of other resources and resource uses. Existing conditions concerning recreation are described in section 3.3.1, Recreational Use.

As part of the RMP process, the BLM has three options for recreation allocations: 1) designation of SRMAs, 2) designation of ERMAs, or 3) not designating areas as either kind of RMA.

In an SRMA, BLM management would be directed at protecting specific, high-quality recreation opportunities that result in specific outcomes. Outcomes include the experiences and benefits attained from recreation participation. Benefits from recreation include personal benefits to participants, benefits to local communities (social, political, and economic), and benefits to the environment. Outcomes are dependent on activities and/or the physical, social, and operational settings where recreation occurs. Changes in recreation activities and settings can result in changes to the types of experiences visitors have and the types of personal, community, and environmental benefits that result from these experiences. A commitment is made in the SRMA allocation to specific, high quality, recreation opportunities.

In ERMAs, the BLM and partners make a commitment to support and sustain recreation activities and the associated qualities and conditions (recreation settings) of the recreation area. No commitment is made to protect the outcomes associated with recreation participation. In ERMAs, recreation is managed commensurate with other resource uses. It would be expected that the quality and quantity of recreation opportunities in an ERMA could change over time as a result of changes in use patterns and changes in other resource use program management.

In areas where no RMA is designated, the BLM makes a minimal commitment to recreation (i.e., ensuring public health and safety, protecting biological and cultural resources, and reducing conflicts between recreationists and between recreation and other resource uses). In areas not designated as RMAs, recreation is managed to achieve other resource use objectives (e.g., livestock grazing, lands and realty).

### **Methods of Analysis**

Direct impacts on recreation are those that allow, restrict, or prohibit opportunity; including both, the opportunity for access (e.g., public closure) and opportunity to engage in specific activities (e.g., participation in camping, shooting, and ATV riding). Indirect impacts are considered to be those that alter the physical, social or administrative settings (see Appendix L). Impacts on settings can either be the achievement of a desired setting or the unwanted shift in setting (e.g., to either a more primitive or urban environment).

Physical, social, and administrative settings are not specifically managed for in areas not designated as RMAs, although these areas do still provide intrinsic recreational values and opportunities. The indicator typically used to describe the impact on these areas is the availability of opportunities as described by either acreage restrictions or specific activity prohibitions.

For areas managed as SRMAs, both availability of recreation opportunities (activities and desired outcomes) and changes to physical, social, and administrative settings are used as indicators of impacts. This discussion analyzes the effects that proposed management decisions would have on managing recreation settings and the targeted outcomes. For areas managed as ERMAs, both

availability of activity opportunities and changes to the qualities and conditions (settings) are used as indicators of impacts. Since visitor use patterns are difficult to estimate and dependent on many factors beyond the scope of management (e.g., recreational trends and economy) only qualitative language (e.g., increase or decrease) is used to describe anticipated impacts on visitation.

For all areas, an indicator of impacts is the potential for changes in the type of interactions between recreationists as a result of management actions and allowable use restrictions. User interactions can range from complementary, to neutral, to conflicting. Complementary user interactions tend to enhance visitor experiences, and conflicting user interactions degrade visitor experiences. The type of interaction visitors experience can vary based on visitor preferences, perceptions of other types of users, and tolerance levels. Conflicting interactions occur when a visitor's expectations or experiences are diminished, and that visitor can attribute the negative impact on another visitor's behavior (Jacob and Schreyer 1980). For example, a hiker with the expectation of a quiet experience who encounters an ATV rider on a trail might consider the encounter as a conflict. The presence of the ATV interferes with the expectation of a quiet outing. Conflict among recreational users is generally asymmetrical; that is, one user might perceive there is a conflict while another user might not perceive there is a conflict (Jackson and Wong 1982). For example, in the case of the ATV rider and the hiker, the ATV rider may not experience a conflicting interaction, but the hiker might. When incompatible activities are allowed in the same area, the asymmetrical nature of recreational conflict can result in limited recreational opportunities for some users. For example, in an area that allows target shooting, ATV riding, and mountain biking, experiences for quiet recreational experiences are limited by the presence of target shooting and motorized trail riding. The presence of mountain bikers may not interfere with the target shooters or the ATV riders, but the target shooters and ATV riders may interfere with the mountain bikers. As a result, only the opportunities that include the noise associated with target shooting and ATV riding are available in that area. As such, the impacts associated with decisions to allow or restrict incompatible activities in one area can be different for different activities and experiences.

Although user interactions are a function of visitor preferences, perceptions of other users, and tolerance levels, management strategies can influence the nature of user interactions. Management strategies to reduce conflicting user interactions include the following:

- Being clear about the goals of management (Marcouiller, Scott, and Prey 2008)
- Managing recreation areas based on social and environmental carrying capacities
- Separating uses in time or space
- Educating users and managers about the issues
- Providing a spectrum of different recreational opportunities

### ***Indicators***

Indicators of impacts on recreation include the following:

- The type of recreation allocation (SRMA, ERMA, or no RMA);
- In SRMAs: changes to 1) the type of targeted outcomes; 2) the supporting setting conditions; 3) the targeted visitor; and 4) the targeted activities;

- In ERMA: changes to 1) the protected activities; and 2) the protected qualities and conditions (defined recreation settings);
- Management actions that result in short-term or long-term elimination or reduction of recreation opportunities, activities, or experiences throughout D-E NCA; and
- Management actions and allowable use restrictions that **change interactions** between different recreation users .

Defining adverse or beneficial impacts is often subjective for the purposes of recreation. A management action may be adverse to one individual or user group, while also beneficial to another individual or user group. Therefore, these labels are not used in this section of Chapter 4.

### ***Assumptions***

The analysis includes the following assumptions:

- Recreation would be managed to support achievement of objectives for the purposes of the D-E NCA.
- As a result of the D-E NCA and Wilderness designations, there will be more visitation from outside the State of Colorado in the future;
- Substantial increases in recreational activity could create risks to public health and safety;
- Traditional recreational uses within the planning area would continue and are anticipated to increase as local populations grow;
- Development of improved facilities, especially recreation trails, would result in increased use;
- The incidence of **conflicting user interactions** would increase with increasing use, especially in ERMA where objectives target protection of a wide range of activities.
- Demand for SRPs would increase during the life of the plan.

Implementing management for the following resources would have negligible or no impact on recreation and are therefore not discussed in detail: noxious **and invasive** weeds, fire and fuels, air resources, and WSAs.

## **Direct and Indirect Impacts**

### ***Impacts from Management of Geological and Paleontological Resources***

Potential impacts from management of geological or paleontological resources could include closure of areas, making them unavailable for public use or recreation activities. Allocating appropriate sites for education and interpretive use would enhance opportunities for visitors to connect with D-E NCA resources.

Applying SSR in sensitive geologic areas under Alternatives B, C, D, and the Proposed Plan Alternative would allow facility construction but could result in relocation of the facilities to areas with less resource impacts. In addition Alternatives B, C, D, and the Proposed Plan Alternative would prohibit installation of rock climbing anchors in sensitive geologic features, which would restrict opportunities for this type of recreation activity in these areas. Alternatives A, B, C, and

the Proposed Plan Alternative would prohibit or restrict collection of all paleontological resources for non-scientific uses, or Native American spiritual or traditional uses, which would change the opportunity to participate in that activity. Under Alternative D, recreational (non-permitted) collection of invertebrate and plant fossils would be allowed, resulting in visitors having the opportunity to connect with the paleontological resources of the D-E NCA. Under Alternatives A, C, D, and the Proposed Plan Alternative visitors would have more opportunities for on-site interpretation. However, Alternatives D and the Proposed Plan Alternative would provide more paleontological sites than Alternatives A and C for interpretation.

***Impacts from Management of Priority Species and Vegetation, Special Status Species and Natural Communities, Non-Special Status Fish and Wildlife, and Soils and Water Quality***

Since recreation would be managed to support biological resource objectives, potential impacts from management of biological resources could include permanent or seasonal closure of areas making them unavailable for public use or recreation activities. Closures or other management of biological resources may also affect the design or creation of new recreation projects such as trails and campground facilities, as well as projects or maintenance in existing recreation developments or areas with established patterns of use. Restrictions that result in loss of activity opportunity would also impact opportunities for visitors to realize desired outcomes. Management actions related to biological resources could enhance recreational experiences by improving opportunities to experience wildlife. Management actions to improve biological resources (primarily vegetation treatments) could also change the naturalness attribute of the physical recreation setting by reducing the contrasts in the landscape created by historic actions (e.g., chainings) or by improving the natural composition and distribution of native vegetation resulting in a more naturally appearing landscape.

Potential impacts from biological resources (priority species and vegetation, special status species, fish and wildlife, and soils and water quality) under all alternatives would include restrictive management measures such as PSD, SSR, and TLs (disruptive activities and seasonal route closures). The types of management activities related to biological resources and the intensity of the action varies under each alternative. Variations in proposed management actions and allowable use decisions are in accordance with theme of the alternatives.

Under Alternative A, the BLM would seek to meet the Colorado Standards for Public Land Health through current management actions. Closures or other management of biological resources under Alternative A may affect the design or creation of new recreation projects such as trails and campground facilities, as well as projects or maintenance in existing recreation developments or areas with established patterns of use. Also, management actions related to biological resources could enhance recreational experiences by improving opportunities to experience wildlife. Alternative A would continue to allow collection of firewood and Christmas trees, resulting in no reduction in opportunity to participate in those activities. However, under Alternative A, management of biological resources would be expected to provide minimal enhancements of wildlife viewing. There would also be minimal improvement in the naturally appearing landscape (i.e., no change, or degeneration, of the naturalness physical setting attribute).

Alternative B would rely on natural processes and restrictions on allowable uses (including recreation) to conserve and protect biological resources. Closing redundant and dead-end travel routes would reduce route-based opportunities, but it would likely increase the quality of those opportunities by focusing recreation on higher-quality routes. Alternative B would eliminate the collection of firewood and Christmas trees, making these activities unavailable. Overall,

increased restrictions on recreation activities would reduce opportunities to participate in recreation activities, or to enjoy the expected recreation setting, more than under Alternative A. However, the increased protection of resources would result in more enhancements to habitats, which would improve wildlife viewing in those areas relative to Alternative A.

Alternative C would stress active management for biological restoration. Restrictions on uses or types of uses would be implemented for the purpose of reducing disturbance in areas with sensitive biological resources. The density of travel routes would be the most heavily reduced in this alternative, because routes leading to any conflicts with resource protection, as well as redundant and dead-end routes, would be closed. The type of impacts from route closures would be the same as those under Alternative B. Overall, due to more ambitious biological objectives under Alternative C, restrictions on recreation activities would be greater than under Alternatives A and B, further reducing opportunities to participate in recreation activities, or to enjoy the expected recreation setting. Similarly to under Alternative B, but to a greater extent, the increased protection of resources would result in more enhancements to habitat, which would improve wildlife viewing in those areas. Additionally, enhancing wildlife habitat would complement SRMA management in Alternative C (e.g., Cactus Park and Gunnison River SRMAs).

Alternative D would also focus on active restoration but would have less ambitious biological objectives than Alternative C, resulting in fewer restrictions on recreation uses than under the other alternatives. Because the BLM would be making a commitment to trail-based recreation and specific recreation outcomes and settings, there would be fewer biological resource management actions that reduce recreation activities or close areas to recreation facility development. Although there would be fewer restrictions, the reduced protection of biological resources would result in fewer enhancements to habitat or scenic resources.

The Proposed Plan Alternative would also focus on active restoration with slightly less ambitious goals than Alternative C and would also have fewer restrictions on recreation uses than the other alternatives. Similarly to under Alternative D, the BLM would be making a commitment to route-based recreation and specific recreation outcomes and settings; therefore, there would be fewer biological resource management actions that reduce recreation activities or close areas to recreation facility development. Although there would be fewer restrictions, the reduced protection of biological resources would result in fewer enhancements to habitat or scenic resources.

Across all action alternatives, resource-specific PSD measures would prevent construction of recreation facilities, including new trails and campgrounds. Resource-specific SSR would allow facility construction but could result in relocation of the facilities to areas with fewer resource impacts. Timing limitations have a variety of impacts on recreation, including seasonal route closures that reduce activity participation during that time of the year. No disruptive activities would prevent construction during that time of the year and would also prevent authorizing activities that are outside normal the background level of activities, such as competitive and organized group SRPs. Overall, there would be a greater impact from prohibiting surface disturbance than from SSR and TL restrictions, because new facility development would not be allowed.

The magnitude of impacts on recreation would be directly related to the acreage of impacts for PSD, SSR, and seasonal restrictions and closures (TLs) (see Table 4.53, Acreage Impacts from Biological Resources in the D-E NCA), because these restrictions generally reduce opportunities

to participate, so visitors could expect a loss of recreation outcome opportunities due to the loss of activity opportunities.

**Table 4.53. Acreage Impacts from Biological Resources in the D-E NCA**

	Alternative A	Alternative B	Alternative C	Alternative D	The Proposed Plan Alternative
<b>PSD</b>	0	90,564	64,290	17,098	48,160
<b>SSR</b>	0	17,354	61,320	48,328	72,123
<b>TL (Seasonal Closures and No Disruptive Activities)</b>	56,315	24,506*	31,450*	17,753*	39,358
*Acreages updated to exclude overlapping areas where year-round surface disturbance is prohibited; a year-round PSD renders an overlapping TL moot.					
Source: BLM 2012i					

Restrictions on other resource uses to protect biological resources would indirectly impact recreation. Limiting livestock use or closing areas in riparian vegetation would reduce potential conflicts between livestock and recreationists .

Under Alternatives C, D, and the Proposed Plan Alternative, requiring the use of guard animals in domestic sheep allotments to protect Desert Bighorn sheep could create a public safety threat to recreation users during the authorized grazing periods. Since the affected sheep allotments are used during the winter months, and the majority of recreation use is during the fall and spring months, the anticipated impacts would be less than if the guard animals were present during the higher use months. These impacts would be limited to the south end of the Hunting Ground along the alignment of the community connection trail between Whitewater and Delta. (See section 4.6.2, Public Safety.)

Recreation would be seasonally limited in portions of the decision area due to seasonal route closures to protect sensitive resources (e.g., soils and/or big game critical winter range). Seasonally closing BLM-administered routes on 63,441 acres to public use under Alternatives C, D and —the Proposed Plan Alternative would limit motorized and mechanized recreation opportunities and would force users to recreate in other portions of the decision area or adjacent areas. However, the Proposed Plan Alternative would retain the Farmers Canyon route (formerly within the proposed seasonal closure area) as open to provide a motorized “loop” opportunity until a new route can be connected north of Farmers Canyon and outside the seasonal closure area. Keeping this loop open in the Proposed Plan Alternative would improve winter season recreational opportunities relative to Alternatives C and D, but seasonal closures and the resultant reduction in motorized and mechanized recreation opportunities would cover a smaller area under Alternatives A and B.

### ***Impacts from Management of Cultural Resources***

Management decisions to protect cultural resources could result in loss of opportunity to participate in activities or place limitations on the recreation program’s ability to construct facilities, such as trails, trailheads, and campgrounds that facilitate or enhance recreation activities. Restrictions that result in loss of activity opportunity would also impact opportunities for visitors to realize desired outcomes. Since cultural resources are highly valued by visitors, on-site service providers, and local communities, cultural resource decisions that result in public access and interpretation of sites would enhance visitor experiences, outfitter services, and local community connections to the D-E NCA’s historic landscape.



Under Alternative A, continuing to actively manage cultural resource areas and sites consistent with Section 106 of the National Historic Preservation Act, particularly in the Cactus Park Cultural Resources Management Site (1,000 acres), could result in closure or restrictions in these areas for recreational activities in order to protect the resource.

Under Alternatives B, C, and the Proposed Plan Alternative, more restrictive management of cultural resources would include restricting recreation activities and surface-disturbing activities in cultural resource areas, including the Rambo/Little Dominguez Canyon Heritage Area, Big Dominguez Canyon Heritage Area, High Park Heritage Area, and Leonards Basin Heritage Area. While protection of cultural resources could reduce the variety of recreational opportunities available in these areas, it might also improve opportunities for interpretation and appreciation of those resources.

Under Alternatives D and the Proposed Plan Alternative, visitors would have the most opportunities for on-site interpretation. This would result in more opportunities for a visitor to connect with the D-E NCA's cultural resource. This management would support recreation outcome objectives, especially in the Escalante Canyon and Hunting Ground SRMAs (e.g., the Old Spanish NHT).

Impacts under Alternative D would be similar to those under Alternatives B, C, and the Proposed Plan Alternative; however, Alternative D is less restrictive toward recreation. For example, Alternative D allows for overnight camping with restrictions in the Rambo/Little Dominguez Canyon Heritage Area, Big Dominguez Canyon Heritage Area, and Leonards Basin Heritage Area.

Additionally, under Alternatives B and C, surface disturbance would more restrictive around sites allocated to public, scientific, conservation, and experimental uses. Alternative D and the Proposed Plan Alternative would apply SSR in these areas, which would allow facility construction but could result in relocation of the facilities to areas with fewer resource impacts.

### ***Impacts from Management of Wilderness***

Recreation would be managed in accordance with the Wilderness Act. This Act specifies that Wilderness must be managed for outstanding opportunities for solitude or a primitive and unconfined type of recreation. Outstanding opportunities for solitude and outstanding opportunities for primitive and unconfined recreation are not one in the same. As such, a decision made to enhance opportunities for solitude may lead to restrictions that impair opportunities for primitive and unconfined recreation. Regardless, management of Wilderness would retain primitive and back country settings. Undeveloped recreation setting characteristics would be protected under all alternatives.

Under Alternative A, continued management of the Dominguez Canyon Wilderness would retain primitive and back country settings, thereby enhancing opportunities for solitude or primitive and unconfined recreation experiences.

Alternative B would provide additional opportunities for unconfined recreation within the Wilderness area. With the exception of closing the Big Dominguez Canyon Heritage Area and the Rambo/Little Dominguez Canyon Heritage Area and the Wilderness portion of the Leonards Basin Heritage Area to overnight camping, and prohibiting drilling or the use of permanent rock climbing equipment, the Wilderness would be managed to enhance the unconfined recreation opportunities. Visitors could expect few regulations except for those to protect naturalness.

Without restrictions on visitor use levels, opportunities for solitude could be lost in certain parts of the Wilderness area.

Alternative C would provide additional opportunities for solitude within the Wilderness area by setting specific targets for group size and number of contacts. Managing visitor use through a permit program would also limit opportunities for unconfined recreation.

Impacts under Alternative D would be similar to those under Alternatives B and C. Since the Wilderness would be managed with different zones, each of the zones having different management emphasis, opportunities for solitude would be protected in certain zones and opportunities for unconfined recreation would be protected in other zones. However, protecting solitude could result in a loss of unconfined recreation and vice versa. Under Alternative D, the BLM would manage for outstanding opportunities for solitude in Wilderness Zone 2 (35,823 acres) and outstanding opportunities for primitive and unconfined recreation in Wilderness Zone 3 (28,784 acres).

Impacts under the Proposed Plan Alternative would be similar to those under Alternatives C and D. For example, this alternative would implement some management that is based on different zones (group sizes and trail system). Impacts from managing zones differently would result in the same type of impacts on opportunities for solitude and unconfined recreation as described under Alternative D.

### ***Impacts from Management of Lands with Wilderness Characteristics***

The types of impacts would be similar to those from wilderness management.

Because no management actions are in place under Alternatives A, C, and D to protect lands with wilderness characteristics, there is no guarantee that primitive and unconfined recreational opportunities and solitude would be preserved over time in these areas. Under these alternatives, some opportunities for motorized and mechanized activities would be retained. In the Dominguez Addition, motorized opportunities would be protected in Alternative D.

Alternative B would provide the most opportunities for primitive and unconfined recreation and solitude in lands with wilderness characteristics through management of wilderness characteristics within Dominguez Addition, Gunnison Slopes, Dry Fork of Escalante, and Cottonwood Canyon . Closing these areas to motorized/mechanized travel would eliminate these types of recreation in these areas. Under the Proposed Plan Alternative, two of the four units found to contain wilderness characteristics (Dry Fork of Escalante and Cottonwood Canyon) would be managed for the protection of wilderness characteristics. In these two areas, opportunities would be available for primitive and unconfined recreation and solitude. In the two areas that would not be managed for protection of wilderness characteristics (Gunnison Slopes and Dominguez Addition), some opportunities for motorized and mechanized activities would be retained, particularly in the Dominguez Addition lands with wilderness characteristics unit.

### ***Impacts from Management of Scenic Values***

In areas managed as VRM Class I, development of recreation facilities such as campgrounds and trails would be restricted and undeveloped recreation opportunities would be enhanced. Conversely, in these areas, recreation opportunities requiring new or additional facilities would be restricted or not available. VRM Class II would allow, with restrictions, development of recreation facilities and protect the naturalness attribute of the physical setting, thereby enhancing

opportunities for all types of visitors to participate in recreation activities in naturally appearing landscapes. VRM Class III would allow more change and contrast to the natural landscape, which could change naturally occurring landscapes into more developed landscapes.

Under Alternative A, the BLM would continue to manage 69,238 acres as VRM Class I (Dominguez Canyon Wilderness) and 36,769 acres as VRM Class II (Map 2–12a), areas where restrictive management would retain the undeveloped nature of the physical setting. However, restricting development of new recreation facilities would limit potential recreation opportunities. Managing 104,871 acres as VRM Class III (remaining areas of D-E NCA, including Cactus Park, The Hunting Ground, Sawmill Mesa, and Wagon Park) would not likely affect the type or amount of recreation use in these areas, because the construction of facilities to support recreation would be permitted. However, reductions in naturalness and degradation of recreational settings are more likely to occur in areas classified as VRM Class III (nearly half of the D-E NCA).

Alternative B would preserve and retain nearly twice as much land at the higher scenic quality objectives of VRM Class I and II than Alternative A (93,468 acres as VRM Class I and 116,519 acres as VRM Class II) (Map 2–12b). No lands in the D-E NCA would be managed at the less restrictive VRM Class III. More land classified under more restrictive VRM Class I and II objectives would retain the existing landscape, thereby protecting the existing physical recreation setting attribute of naturalness.

Alternative C is somewhat less protective than Alternative B, managing fewer lands as VRM Class I (71,679 acres) and more lands as VRM Class II (138,308 acres) (Map 2–12c). Impacts from scenic resources would be similar to those under Alternative B.

Alternative D is somewhat more protective than Alternative B, managing more lands as VRM Class I (107,636 acres), primarily to protect recreation settings in the Hunting Ground, Gunnison Slopes, and Cottonwood Canyon SRMAs, and fewer lands as VRM Class II (102,351 acres) (Map 2–12d). Impacts from scenic resources would be similar to those for Alternative B.

The Proposed Plan Alternative is somewhat less protective than Alternative B, managing fewer lands as VRM Class I (82,830 acres) and more lands as VRM Class II (127,169 acres) (Map 2–12p). Impacts from scenic resources would be similar to those for Alternative B.

### ***Impacts from Management of Recreation***

Impacts on recreation from management of recreation can occur from: 1) decisions about whether to manage an area as an SRMA, ERMA, or no RMA; 2) decisions that identify a management preference for one type of activity over another; 3) in SRMAs, decisions that identify management preference of specific outcomes; 4) decisions that identify specific recreation settings; and 5) decisions that restrict recreation opportunities.

Designating an area as an SRMA would protect specific, high-quality recreation opportunities that result in specific outcomes (experiences and benefits). Non-targeted recreation users and activities would be restricted as necessary to achieve SRMA objectives. BLM recreation resources would be prioritized to SRMA management. Designating an area as an ERMA would limit management to protecting opportunities to participate in defined activities and the associated qualities and conditions (recreation settings). As such, the BLM would not make a commitment to the quality or quantity of recreation opportunities. Since recreation is managed commensurate with other resource uses in ERMAs, recreation settings and opportunities could be impacted by those other uses, and current opportunities and recreation settings could change over time as a

result. In areas not allocated as recreation areas, recreation would still occur; however, recreation would be restricted as necessary to meet other resource use objectives (livestock grazing/lands and realty). As a result, opportunities to participate in activities and recreation settings would change over time.

In SRMAs and ERMAs, decisions that identify management preference for one type of activity over another would result in long-term protection for the preferred activity and potential loss of opportunity for the non-preferred activity. The results for those seeking the preferred activity would be continuation or enhancement of their recreation opportunities. The result for those not seeking the preferred activity would be new restrictions on use and possible displacement of these users to other areas inside or outside the D-E NCA. ERMAs where the management preference includes protection of a wide variety of activities with no clear preference for one activity, would meet visitor, service provider (such as local businesses and local governments), and community desires for the availability of multiple activities; however, there would be a higher risk of conflicting user interactions developing between incompatible recreation activities (e.g., ATV riding and hiking). The effects of the conflicting interactions would grow as use grows and could result in displacement of visitors and loss of recreation value in the area. These effects would extend beyond the on-the-ground visitor and include potential impacts on service providers and communities. Dissatisfied visitors are less likely to require support services (such as gear and guides). Dissatisfaction could also impact local communities through the loss of a valuable tourism asset and a quality of life amenity.

Like the discussion above about activities, decisions to identify specific outcomes in SRMAs and decisions to identify specific recreation settings in both SRMAs and ERMAs would result in long-term protection for the participants, service providers and communities that desire those outcomes and settings. Conversely, visitors, service providers and communities that desire different outcomes and settings would be restricted and displaced to other areas inside or outside the D-E NCA.

Additionally, recreation decisions that restrict or limit recreation opportunities would have similar results. Participants, service providers, and communities that are not affected by restrictions would have their opportunities enhanced (e.g., closing an area to shooting enhances the recreation setting for those who do not appreciate shooting). On the other hand, the participants, service providers, and communities that are restricted would lose opportunities (e.g., limiting the number of campsites along the river could result in less opportunity for commercial outfitters to grow their business or closing areas to motorized recreation could result in less business for OHV shops).

Under Alternative A, there would be no designated RMAs and recreation would continue to be managed to reduce user conflict and to ensure public health and safety. There would be no protection of recreation settings, activities, and outcome opportunities. Over time, recreation opportunities would be lost where recreation conflicts with other resource uses, primarily livestock grazing and lands and realty. Opportunities would also be lost where conflicting interactions displace certain types of recreation users (e.g., non-motorized, users leaving an area with motorized use or recreationists who do not shoot leaving areas where target shooting is allowed).

Existing recreation attractions (such as trails, trailheads, campsites, and boat ramps) would often meet the current level of recreational demand in the planning area. However, seasonal crowding at attractions may change user enjoyment of the area, because use exceeds management capability. Similarly, the anticipated increase in recreation over the life of the RMP could result in more conflicting user interactions and degraded recreation experiences.

Lack of specific recreation management or guidance could increase the number of campsites in areas near existing routes and along the Gunnison River, providing for opportunities for camping throughout the D-E NCA. However, this dispersed use could result in increased surface disturbance in localized areas, degrading the natural and cultural landscape and changing the naturalness attribute of the physical setting over time.

Allowing geocaching without restrictions would provide for that recreational opportunity, but could increase surface disturbance, visitor conflicts, and health and safety issues in localized areas with frequent use, potentially changing the naturalness and visitor use attributes of the recreation setting. Geocaching can result in frequent visits to a specific area, which, over time, can result in new social trails and other disturbances that trample vegetation and creates contrast with the natural landscape.

Similarly, allowing recreational target shooting (except in the Potholes Recreation Site, Escalante put-in, and Dominguez campground) would increase the potential for surface disturbance, visitor conflicts, and health and safety issues. This could change the naturalness and visitor use attributes of the recreation setting. Target shooting is a unique recreational activity in that it has a broad spatial and auditory influence on the landscape.

Because recreational shooting includes a variety of semi-automatic and ultra long-range firearms and the activity has increased dramatically in recent years, few activities have as far reaching effects on the experience of other users or area resources (Morgan, Newman, and Wallace 2007).

Bullets can travel large distances; noise from gunfire can be heard from greater distances than other activities (e.g., motorized recreation); and litter associated with the activity (broken glass, broken clays, empty casings, and opportunistic targets like televisions and other appliances) are highly visible on the landscape. Additionally, the sound of shooting is unique, and visitors react to that unique sound in different ways. To some, the sound is familiar and poses no threat. To others the sound of shooting creates a perception of danger. As a result, target shooting has a higher risk of creating conflict with other users. This conflict is almost always asymmetrical; that is, other users experience conflict from the target shooting activities, but target shooters do not experience conflict from other users. As such, it is likely that non-target shooting visitors would be displaced from areas where target shooting occurs. Under Alternative A, there would be no restrictions on where target shooting could occur (except in the developed campgrounds and the Escalante put in). Not restricting where target shooting can occur combined with the projected increased in use would result in more areas of the NCA where the only recreation experience opportunities that would be available are those that include the sights and sounds of shooting.

In addition to impacts from target shooting on other forms of recreation, impacts from target shooting are also discussed in the sections within this Chapter on Special Status Species and Natural Communities (4.3.2.2), Non-Special Status Fish and Wildlife (4.3.2.3), Fire and Fuels (4.3.2.5), Soils and Water Quality (4.3.2.6), Cultural Resources (4.3.3), Wilderness (4.3.4), Lands with Wilderness Characteristics (4.3.5), Scenic Resources (4.3.6), Educational Use (4.4.3), Livestock Grazing (4.4.4), Areas of Critical Environmental Concern (4.5.1), Watchable Wildlife Areas (4.5.5), Tribal Interests (4.6.1), and Public Safety (4.6.2). Many of these resources and resource uses represent purposes of the D-E NCA, as identified in the Omnibus Act of 2009.

Allowing recreationists to collect wood for use in campfires, or engage in paintball activities, would provide for those ongoing opportunities, but it could degrade the recreational setting through changes to the natural and scenic landscape in areas of concentrated use. Continuing

to allow recreational prospecting at the Rattlesnake Gulch site would provide for opportunities for those users.

Issuing SRPs on a case-by-case basis would continue to provide opportunities for competitive and noncompetitive events, and commercial outfitting services. However, continuing to allow special events could change the recreational setting and experiences for other users not participating in the events.

Under Alternative B, a large portion of the D-E NCA would be designated as an ERMA, where the principal recreation activities would be protected and supported and where recreation would be managed commensurate with other resources. There would be no SRMA management; therefore, recreation outcomes would not be protected under this alternative. Over time specific valued outcomes desired by current visitors, service providers, and affected communities may not be available in the future. However, opportunities for a variety of recreation activities would be protected. Recreation management actions to protect and provide recreation activity opportunity (trail design, construction, maintenance, and access points) would help mitigate conflict between other resource uses and with important biological and cultural resources.

The Hunting Ground ERMA would offer visitors motorized and non-motorized trail based activities and dispersed camping. Facilitating recreation in this area through an ERMA designation and developing supporting infrastructure (e.g., trailheads and trails) would enhance activity opportunities and likely lead to an increase in use. The decision to protect a wide range of activities in the Hunting Ground would meet visitor, service provider, and community desires for a multitude of activities available; however, there would be a higher risk of **conflicting use interactions** developing between incompatible recreational activities (i.e., motorized and non-motorized trail users). The effects of the interactions would grow as use grows and could result in displacement of visitors and loss of recreation value in the area. As mentioned above, these effects would extend beyond the on-the-ground visitor and include potential impacts on service providers and communities. Dissatisfied visitors are less likely to require support services (such as gear and guides). Dissatisfaction could also impact local communities through a loss of a valuable tourism asset and a quality of life amenity.

Impacts on recreation in the Cactus Park ERMA would be similar to impacts in the Hunting Ground ERMA. However, the potential for **conflicting interactions** is greatly reduced, because management is selected to protect only motorized activities. Non-motorized activities could be restricted where they come into conflict with motorized activities.

Impacts on recreation in the Gunnison River Corridor ERMA and Sawmill Mesa/Wagon Park ERMA would be similar to the Hunting Ground ERMA. The impacts on East Creek ERMA and Escalante Canyon ERMA would be similar to the Cactus Park ERMA, because the potential for **conflicting interactions** between non-compatible recreational activities is greatly reduced, because management protects selected activities. Restrictive management of rock climbing in the East Creek ERMA and Escalante Canyon ERMA would result in alterations of this activity and a loss of the activity in certain places and at certain times; however, the activity of rock climbing would be protected in these areas throughout the life of the plan.

Under Alternative B, prohibiting recreational target shooting, geocaching, metal detecting, paintball activities, and recreational prospecting throughout the D-E NCA, and restricting recreation (including access, timing, and activity) as necessary to reduce conflicts with grazing, would result in the loss of certain recreational opportunities compared with Alternative A, but this could result in reducing the evidence of recreational uses in localized areas where these

activities would no longer occur and decreasing **conflicting interactions** with other recreational opportunities (i.e., recreating in settings without these uses). Note that restrictions on recreational target shooting do not apply to hunting. Closing certain areas to camping when visitor conflicts arise would change the visitor use attribute of the social setting over time; however, this would reduce the availability of camping throughout the D-E NCA. Not issuing SRPs for competitive motorized events where speed or time determines winners would result in a loss of opportunities for these types of events inside the D-E NCA. These participants and event organizers would be displaced to areas outside the D-E NCA. Evaluating SRP proposals using the Permit Evaluation Factors and Permit Classification System would ensure all proposals protect D-E NCA resources and are consistent with resource program objectives.

Closing the entire NCA to target shooting would result in a loss of opportunity to participate in that activity. Target shooters would be displaced to areas outside the NCA. There would be no conflicts, like those described in Alternative A, as a result of target shooting. There would be long-term protection of recreation opportunities that do not include the sights and sounds associated with target shooting across the entire NCA.

Under Alternative B, camping and crowding issues at the mouth of Dominguez Canyon would likely be resolved. That said, closing the area to overnight camping for all users would result in loss of opportunity for both the hike-in and river users. Loss of the popular river campsites would result in more pressure on other campsites along the river. When combined with the Alternative B management action to not implement a special area special recreation permit and campsite reservation system, closing the mouth of Dominguez Canyon to camping would result in more competition for and conflict over other campsites along the river.

Under Alternative C, designating two SRMAs (Cactus Park and Gunnison River) would provide long term protection of specific recreation outcomes in those areas. However, other recreation outcomes would not be protected in these areas.

The Cactus Park SRMA would be managed to protect outcomes associated with learning, enjoying natural settings, greater appreciation of protection of biological and cultural resources, greater appreciation of historical uses of the D-E NCA landscape, and increased attraction of local communities. This SRMA would target visitors that seek opportunities to participate in hiking, horseback riding, camping and back road touring. To achieve outcomes associated with protection of biological and cultural resource protection, it is likely minimal recreation development would occur. As such, visitors seeking outings supported by a wide variety of recreation facilities (i.e., trails) would not be accommodated. Additionally, to support the outcome associated with appreciation of historic uses, visitors with a low tolerance for recreating with livestock and evidence of livestock would likely be displaced. Conversely, visitors and local communities seeking long-term protection of historic livestock grazing patterns and use in the D-E NCA would be supported by this type of recreation management. To support the outcomes and recreation settings, the SRMA would be closed to target shooting. This would result in a loss of opportunity for users to participate in target shooting. Conversely, opportunities for recreation participation in areas where target shooting does not interfere with recreation outings would have long-term protection.

The Gunnison River SRMA would be managed to protect outcomes associated with solitude and natural surroundings. This SRMA would target visitors that seek opportunities to participate in canoeing, kayaking, rafting, and camping. Hiking and horseback use through the area around the mouth of Dominguez Canyon would not be protected. Where **conflicting interactions** occur, the

hiking and horseback use could be restricted. The mouth of the Dominguez Canyon would be closed to overnight camping to non-river users. Limiting camping along the river to designated undeveloped campsites would set a capacity for overnight use along the river. As a result, demand beyond this capacity would be displaced, and the associated service providers (i.e., commercial river outfitters and equipment rentals) and affected communities could lose desired social and economic benefits. To support the outcomes and recreation settings, the SRMA would be closed to target shooting. This would result in a loss of opportunity for users to participate in target shooting. Conversely, opportunities for recreation participation in areas where target shooting does not interfere with recreation outings would have long-term protection.

Alternative C would limit commercial groups camping at the mouth of Dominguez Canyon to 50 percent of the designated undeveloped campsites. As a result, demand beyond this capacity for these commercial groups would be displaced, and the associated service providers (i.e., commercial river outfitters) and affected communities could lose desired social and economic benefits.

Alternative C would implement an allocation system for commercial groups camping at the mouth of the Dominguez Canyon that would be based on an annual lottery system. This would result in uncertainty about available campsites in this area and would impact commercial guide businesses.

Under Alternative C, conflicts associated with the campsites at the mouth of Dominguez Canyon would be reduced. As noted, hiking and horseback riding would not be the targeted activities in the area. As a result, the campsites would be available exclusively for river users during the river season. When combined with the management actions to implement a reservation system for river campsites and a special area special recreation permit for private boaters camping along the river, closing the campsites to hikers and horseback riders coming from the Bridgeport Trailhead during the boating season would greatly reduce conflicts and enhance the experiences of the river users.

Throughout the remaining areas of the D-E NCA, recreation would be managed with no RMA designation, resulting in impacts similar to those described under Alternative A.

Prohibiting metal detecting, paintball activities, and recreational prospecting under Alternative C would result in the same impacts as under Alternative B. Allowing restricted geocaching would provide opportunities for this type of activity under Alternative C. Similarly to under Alternative B, closing certain areas to camping when visitor conflicts arise would change recreation settings over time; however, this would reduce the availability of camping throughout the D-E NCA. Like Alternative B, not issuing SRPs for competitive motorized events where speed or time determines winners would result in a loss of opportunities for these types of events inside the D-E NCA. These participants and event organizers would be displaced to areas outside the D-E NCA. Evaluating SRP proposals using the Permit Evaluation Factors and Permit Classification System would ensure all proposals protect D-E NCA resources and are consistent with resource program objectives.

The result of closing areas (104,999 acres or 50 percent of the D-E NCA) to target shooting would be the same as those described in Alternative B. However, this closure may concentrate this activity in other parts of the D-E NCA where the closure does not apply (104,999 acres or 50 percent of the D-E NCA). In those areas, impacts from target shooting would be the same as those described for Alternative A.

Under Alternative D, the entire D-E NCA (except the Dominguez Canyon Wilderness area) would be designated as RMAs. The Sawmill Mesa/Wagon Park area would be managed as an



ERMA and the remaining areas would be managed as SRMAs. Designating specific SRMAs would reduce **conflicting interactions** between different types of recreation participants, because management focus would be more structured. Under this alternative, all SRMAs would be closed to target shooting. This would result in a loss of opportunity for users to participate in target shooting. Conversely, opportunities for recreation participation in areas where target shooting does not interfere with recreation outings would have long-term protection.

The Hunting Ground SRMA would be managed to protect outcomes associated with heritage tourism and improved recreation tourism economy. This SRMA would target visitors that seek opportunities to participate in auto touring, hiking, horseback riding, and mountain biking. Motorized recreation use would not be protected. As a result, motorized visitors and visitors seeking different outcomes would be displaced to other areas of the D-E NCA or outside the D-E NCA; and the associated service providers and affected communities could lose desired social and economic benefits.

With the exception of different targeted outcomes, the types of impacts from recreation management in the Gunnison River SRMA would be similar to those for Alternative C. Alternative D would focus management on outcomes associated with social settings that include larger group sizes, and more frequent contacts. The opportunities for solitude would not be protected under this alternative. Additionally, Alternative D would implement an allocation system for commercial groups camping at the mouth of the Dominguez Canyon that would be based on historic use. This would result in greater certainty about available campsites in this area for commercial guide businesses.

Under Alternative D, management actions for camping at the mouth of Dominguez would be similar to those described under Alternative C. The difference between Alternative C and D would be how commercial campsites would be allocated. Under Alternative D the allocation would be based on historic use. Under Alternative C, the allocation would be based on a lottery system. As noted, the lottery system would result in less certainty for commercial operators than an allocation system based on historic use.

The Ninemile Hill SRMA and Cactus Park SRMA would be managed to protect outcomes associated with social settings that include larger group sizes, and more frequent contacts. These SRMAs would target visitors that seek opportunities to participate in motorized trail riding (ATVs in Cactus Park and motorcycles in Ninemile Hill) and camping (Cactus Park). Non-motorized recreation in this area would not be a targeted activity under this alternative. As a result, non-motorized visitors and visitors seeking different outcomes would be displaced to other areas of the D-E NCA or outside the D-E NCA; and the associated service providers and affected communities could lose desired social and economic benefits.

The Gunnison Slopes and Cottonwood Canyon/Dry Fork SRMAs would be managed similarly to protect outcomes associated with natural undeveloped surroundings and opportunities for solitude. These SRMAs would target visitors that seek opportunities to participate in hiking and horseback riding. Motorized recreation use would not be protected. As a result, motorized visitors and visitors seeking different outcomes would be displaced to other areas of the D-E NCA or outside the D-E NCA; and the associated service providers and affected communities could lose desired social and economic benefits. In these areas, the impacts on motorized recreation would be minimal due to the topography of Cottonwood Canyon and there are few routes that would accommodate motorized vehicles.

The East Creek SRMA would be managed to protect outcomes associated with social settings that include larger group sizes, more frequent contacts, and improved recreation tourism economy. This SRMA would target rock climbing and scenic touring. Visitors seeking different outcomes would be displaced to other areas of the D-E NCA or outside the D-E NCA; and the associated service providers and affected communities could lose desired social and economic benefits.

The Lower Sawmill Mesa/Wagon Park SRMA would be managed to protect outcomes associated with physical exercise, improved health, and an improved recreation tourism economy. This SRMA would target mountain biking and camping. Local communities, especially the City of Delta, could realize the economic benefits of a destination attraction similarly to what has occurred for other mountain biking attractions in the region. Motorized, horseback, and hiking recreation use would not be protected. As a result, motorized and horseback visitors, and visitors seeking different outcomes would be displaced to other areas of the D-E NCA or outside the D-E NCA; and the associated service providers and affected communities could lose desired social and economic benefits. Under Alternative D, the Upper Sawmill Mesa/Wagon Park areas would be managed as an ERMA. As such, the impacts would be similar to those described under Alternative B.

The Escalante Canyon SRMA would be managed to protect outcomes associated with heritage tourism and improved recreation tourism economy. This SRMA would target visitors that seek opportunities to participate in auto touring and picnicking. As a result visitors seeking different activities or outcomes would be displaced to other areas of the D-E NCA or outside the D-E NCA; and the associated service providers and affected communities could lose desired social and economic benefits. Restrictive management of rock climbing in the Escalante Canyon ERMA would result in alterations of this activity and a loss of the activity in certain places and at certain times.

Prohibiting metal detecting, paintball activities, and recreational prospecting under Alternative D would result in the same impacts as Alternative B. Similarly to under Alternative B, closing certain areas to camping when visitor conflicts arise would change recreation settings over time; however, this would reduce the availability of camping throughout the D-E NCA. Alternative D would issue SRPs for competitive motorized events where speed or time determines winners, providing opportunities for these types of events inside the D-E NCA. Evaluating SRP proposals using the Permit Evaluation Factors and Permit Classification System would ensure all proposals protect D-E NCA resources and are consistent with resource program objectives. Impacts from allowing geocaching and recreational prospecting would be similar to those under Alternative A, providing for that recreational opportunity, but could increase visitor conflicts in localized areas with frequent use, potentially changing the recreational setting.

The result of closing areas (156,942 acres or 75 percent of the D-E NCA) to target shooting would be the same as those described in Alternative B. However, this closure may concentrate this activity in other parts of the D-E NCA where the closure does not apply (53,056 acres or 25 percent of the D-E NCA). In those areas, impacts from target shooting would be the same as those described for Alternative A.

Similarly to under Alternative B, a large portion of the D-E NCA would be designated as ERMA under the Proposed Plan Alternative. The Hunting Ground, Ninemile Hill, East Creek, and Sawmill Mesa/Wagon Park area would be managed as ERMA; the remaining areas would be managed as SRMAs.

In the Hunting Ground ERMA, the impacts would be similar to those under Alternative B except that there would be more opportunities for longer-term camping (up to 7 days versus 3 days under Alternative D). In the Gunnison River SRMA, the impacts would be similar to those under Alternative D.

Under the Proposed Plan Alternative, the Ninemile Hill ERMA would protect non-motorized and non-mechanized activities. Facilitating recreation in this area through an ERMA designation and developing supporting infrastructure (e.g., trailheads and trails) would enhance activity opportunities and likely lead to an increase in use. With the exception of the Tabeguache Trail, motorized and mechanized visitors would be displaced to other areas within or outside of the D-E NCA. Service providers (e.g., OHV and bicycle shops) that support these visitors could see a decline in business. Impacts on recreation would be the same as Alternative D.

Like Alternative D, the Cactus Park SRMA would be managed to protect outcomes associated with social settings that include larger group sizes, and more frequent contacts. This SRMA would target visitors that seek opportunities to participate in ATV and motorcycle trail riding and camping. Impacts on recreation would be similar to those under Alternative D.

Under the Proposed Plan Alternative, the impacts associated with management actions to limit camping at the mouth of Dominguez Canyon to river users during the river season, implement a special area special recreation permit for private boaters, and allocate commercial camping based on historic use would be similar to those under Alternative D.

The East Creek ERMA would be managed similarly to under Alternative B, and impacts would be the same as under Alternative B.

The Sawmill Mesa/Wagon Park ERMA would be managed similarly to under Alternative B, and impacts would be the same as under Alternative B.

The Escalante Canyon SRMA would be managed similarly to under Alternative D; however, under the Proposed Plan Alternative, the SRMA would be managed to protect outcomes associated with heritage and ecological tourism and improved recreation tourism economy. Impacts would be the same as under Alternative B.

Under the Proposed Plan Alternative, the Cottonwood Canyon/Dry Fork area would not be managed as RMAs. These areas would be managed to protect inventoried wilderness characteristics. Since opportunities for primitive and unconfined recreation and solitude are part of the inventoried characteristics that would be protected, those recreation opportunities are indirectly protected. Current visitors seeking other opportunities would be displaced to other parts of the NCA, or outside the NCA.

Prohibiting metal detecting, paintball activities, and recreational prospecting under the Proposed Plan Alternative would result in the same impacts as Alternative B. Similarly to under Alternative B, closing certain areas to camping and campfires when visitor conflicts arise would improve recreation settings over time; however, this would reduce the availability of camping throughout the D-E NCA. Like Alternative B, not issuing SRPs for competitive motorized events where speed or time determines winners would result in a loss of opportunities for these types of events inside the D-E NCA. Physical geocaches would only be allowed outside of the Wilderness and would require BLM authorization prior to placement; impacts would be the same as Alternative C in this area. Inside the Wilderness, navigational recreational activity (i.e., geocaching) would only

be allowed in a virtual setting (i.e., earth caches), there would be lower potential for impacts on the resources in the wilderness area.

Under the Proposed Plan Alternative, recreational gold panning would be allowed in the D-E NCA by use of non-motorized and non-mechanized equipment. Impacts would be similar to those under Alternative D except that more of the NCA would be available for the use.

The result of closing areas (9,995 acres or 5 percent of the NCA) to target shooting would be the same as those described in Alternative B. In other areas of the D-E NCA (200,003 acres or 95 percent of the D-E NCA), conflicts could occur between recreational target shooting and other recreational uses. In those areas, impacts from target shooting would be the same as those described for Alternative A. This impact would be greatest in Wilderness Zones 2 and 3, and Ninemile Hill, where target shooting would be allowed and the BLM is managing for quiet use and/or solitude recreation experiences.

### ***Impacts from Management of Educational Use***

Increased education management would be an important management tool to respond to future recreation demand. Providing education and additional information related to biological and cultural resources would improve learning experiences for visitors and protect other D-E NCA resources through stewardship messages.

Under Alternatives C, D, and the Proposed Plan Alternative would provide enhanced educational opportunities with interpretive signs and other facilities that educate users and provide additional information to help them better structure their visits to the D-E NCA in a manner consistent with their desired expectations. However, under the Proposed Plan Alternative, education would be guided by an objective that clearly defines educational outcomes and the interpretive services provided. This would result in more opportunities to improve learning experiences for visitors and to protect other D-E NCA resources.

### ***Impacts from Management of Scientific Use***

Under Alternatives B through the Proposed Plan Alternative, scientific research on socioeconomic impacts and benefits associated with the D-E NCA will allow management to meet recreation and associated socioeconomic goals to a greater extent than under Alternative A.

### ***Impacts from Management of Livestock Grazing***

Impacts on recreation from livestock grazing include trampling and manure impacts at popular recreation sites (e.g., campsites and trails). The intensity of the impact would vary with the visitor's experience of recreating in areas where livestock grazing is present. Visitors from the Intermountain West are more accustomed to recreating in areas with livestock impacts. As a result, the impacts on their recreation outing might be less than it is to a visitor from outside the Intermountain West who is not accustomed to recreation in areas with livestock impacts (Brunson and Wallace 2002). In addition, development of livestock grazing facilities impacts the naturalness attribute of the physical setting. Stock ponds, catchments, and other facilities all contrast with the natural landscape.

Livestock grazing would complement recreation management in RMAs where heritage tourism would focus on the importance of historic and present day ranching, and appreciation of the historic uses of the landscape.

At least 90 percent of the D-E NCA would be open to livestock grazing in all alternatives (98 percent in Alternative A, 90 percent in Alternative B, 97 percent in Alternative C, 100 percent in Alternative D, and 98 percent in the Proposed Plan Alternative). As such, the impacts described above to recreation from livestock grazing would be similar across all alternatives. It is expected that trampling and manure would be evident to most D-E NCA visitors.

Under Alternative A, 4 percent of the D-E NCA would be limited to active movement only (see Glossary) for livestock use. These areas are generally along perennial streams (Big and Little Dominguez Canyons and Escalante Canyon). All of these canyons are highly valued recreation attractions and limiting livestock use to active movement only would reduce the number of encounters between livestock and recreationists and reduce the amount of trampling and manure in these areas.

Under Alternative B, 6 percent of the D-E NCA would be limited to active movement only for livestock use. The impacts would be similar to those in Alternative A. In addition to Big and Little Dominguez Canyons, the Gunnison River riparian areas would be limited to active movement only. As a result the river campsites would have fewer livestock impacts. Escalante Canyon would be closed to livestock use. As a result, the popular Potholes Recreation site and the surrounding dispersed campsites would be protected from livestock impacts. Restricting recreation in areas where there is conflict between livestock grazing and recreation would result in the potential loss of opportunities.

Under Alternative C, 8 percent of the D-E NCA would be limited to active movement only for livestock use. In the restricted areas, the impacts would be similar to those in Alternatives A and B. Livestock grazing would support recreation outcomes in the Cactus Park SRMA where the recreation objectives include an appreciation of the historic uses of the D-E NCA's landscape. Developing Allotment Management Plans with livestock management practices that reduce livestock concentrations around popular recreation attractions would reduce potential conflicts between recreation and livestock grazing.

Under Alternative D, 3 percent of the D-E NCA would be limited to active movement only for livestock use. In the restricted areas, the impacts would be similar to those in Alternatives A and B. Livestock grazing would support recreation outcomes in the Escalante Canyon SRMA where the recreation objectives include an appreciation of the historic uses (including grazing) of the D-E NCA's landscape. Impacts from developing grazing management practices to reduce concentration at popular recreation attractions would be similar to those in Alternative C.

Under the Proposed Plan Alternative, 7 percent of the D-E NCA would be limited to active movement only for livestock use. In the restricted areas, the impacts would be similar to those in Alternatives C and D. Impacts on recreation from grazing would be resolved on a case-by-case basis in accordance with BLM policies, ensuring that conflicts are addressed, but in a potentially less proactive manner than under Alternatives C and D.

### ***Impacts from Management of Transportation and Travel***

The results of area and route designations include changes to miles of routes available for different recreation activities, changes in the remoteness attribute of the physical setting, and changes in the access attribute of the operational setting. Routes that are designated open for different recreation uses continue to provide opportunities for those uses, and routes closed to different uses restrict opportunities for those uses. Areas designated as closed to motorized and mechanized travel results in a more primitive operational setting. Closing and rehabilitating

routes (i.e., decommissioning and removing the route from the landscape) results in a more primitive physical setting.

Under each alternative, recreational activities would be allowed on routes designated for each of the different uses. It is assumed that routes open to full-sized vehicles would be open to all other uses; routes open to ATVs would be open to motorcycles, bicycles and horse and foot travel. Table 4.54, Designated Routes (Miles) by Alternative, provides route mileage for travel designations.

**Table 4.54. Designated Routes (Miles) by Alternative**

	Alternative A	Alternative B	Alternative C	Alternative D	The Proposed Plan Alternative
<b>Routes Designated for All Vehicles</b>	472*	162*	100*	163*	211
<b>Routes Designated for Vehicles Less Than 50 Inches in Width</b>	53*	81*	3*	61*	102
<b>Routes Designated for Motorcycles and Mechanized Use</b>	18*	13*	23*	90*	23
<b>Routes Designated for Mechanized Use</b>	0	10*	23*	68*	12
<b>Routes Designated for Horse and Foot Travel</b>	90*	47*	35*	66*	112
*Numbers recalculated for Draft alternatives to account for mileage consistently across all alternatives.					
Source: BLM 2012i					

Travel designations support resource programs and are designed to help achieve their objectives. As a result, there are no impacts from travel decisions; however, impacts on recreation result from travel-related resource allocations and management actions and allowable use decisions from other resources. For example, a decision to close routes to protect wildlife habitat could have impacts on recreation opportunities. In this case, the impact of a loss of recreation opportunity flows from a wildlife decision, not a travel decision. These types of impacts are discussed under those particular resource topics discussed in this section.

As mentioned above, travel management decisions, both area and route-by-route decisions, can impact the recreation setting characteristics of an area. The remoteness attribute of the physical setting represents how far a visitor is from a road or a trail. The further from a road or trail, the more primitive the remoteness setting is. The setting does not change on the basis of whether the road or trail is open. It only changes if the road or trail is removed from the landscape. As such, under Alternative A and B, the remoteness setting does not change. Under Alternatives C, D, and the Proposed Plan Alternative, the remoteness setting would become more primitive.

The access attribute in the operational setting represents the type of travel permitted in an area. In areas that are closed to motorized and mechanized travel, the setting is more primitive.

The acreage differences for these two recreation setting attributes are summarized in Table 4.55, Remoteness and Access Settings (Acres) by Alternative.

**Table 4.55. Remoteness and Access Settings (Acres) by Alternative**

	Alternative A	Alternative B	Alternative C	Alternative D	The Proposed Plan Alternative
<b>Remoteness Attribute</b>					
<b>Rural</b>	21,662	21,662	21,662	21,662	22,083
<b>Front Country</b>	20,568	20,567	20,567	20,567	20,418
<b>Middle Country</b>	111,443	113,477	96,045	100,236	106,110
<b>Back Country</b>	31,507	28,639	28,639	36,241	34,878
<b>Primitive</b>	24,388	25,224	42,657	30,864	26,498
<b>Access Attribute</b>					
<b>Rural</b>	7,834	7,834	7,834	7,834	21,662
<b>Front Country</b>	20,767	20,767	20,767	20,767	20,418
<b>Middle Country/Back Country</b>	114,775	93,208	115,526	115,526	87,725
<b>Primitive</b>	66,193	88,511	66,193	66,193	80,093

Source: BLM 2012i

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

Impacts would include fragmentation from roads and intrusions from facilities such as water tanks, structures, and power lines. These intrusions could alter the recreation setting affecting the attributes of access, remoteness, and naturalness. Land acquisitions could provide access to public land where currently unavailable and provide a demand for facilities and activities in these areas.

Acquiring non-Federal lands under all alternatives could increase the area of public land available for recreational opportunities and experiences. In general, retention of all public land would provide for continued recreational opportunities within the D-E NCA (although the specific opportunities in localized areas would vary by alternative).

Managing 8,960 acres within the Gunnison River corridor, 1,000 acres within Cactus Park, and 49,976 acres within the Dominguez Canyon as unsuitable for public utilities under Alternative A would preserve recreation opportunities and experiences, and the naturalness attribute of the physical setting in these areas. Closing these areas to public utilities would protect undeveloped recreation settings by preserving opportunities for primitive and unconfined recreation. In addition, locating facilities in existing utility corridors would also help preserve naturalness throughout the D-E NCA. The continued presence of the Ninemile communication site (regardless of whether additional facilities were allowed at each site) and managing two corridors (West-wide Energy Corridor and Unaweep Canyon) for public utilities and other facilities would change the recreational settings in localized areas near the communication sites over the long term. Locating facilities in these areas could close these areas to recreation or change the naturalness attribute of the physical setting and limit opportunities for recreation.

By managing the entire D-E NCA as a ROW exclusion area (with exceptions for providing reasonable access and utilities to private property and existing ROW facilities, and upgrades or modifications to existing facilities), Alternative B would provide additional protection of naturalness throughout the D-E NCA. In addition, more restrictive management of the Ninemile communication site and new towers within the D-E NCA, and not managing any utility corridors under Alternative B would also preserve naturalness in these areas.

Management under Alternative C and the Proposed Plan Alternative would be similar to that under Alternative B (D-E NCA-wide ROW exclusion area), with the exception of allowing

research and monitoring sites in ROW exclusion areas (Alternative C), designating a ROW avoidance area along Highways 50 and 141 (the Proposed Plan Alternative), and managing one utility corridor (Alternative C). Alternative D would only manage the following areas as ROW exclusion areas; Dominguez Canyon Wilderness, Dominguez Canyon WSA, Gibbler Mountain ACEC, Gunnison Gravels ACEC, Gunnison River ACEC, and Escalante ACEC, and would also allow research and monitoring facilities, and one utility corridor. Overall, management under these alternatives would preserve naturalness and would increase opportunities for recreation similarly to under Alternative B, except in areas where research and monitoring sites are located or in the Highway 50 and 141 ROW avoidance areas.

### ***Impacts from Management of Areas of Critical Environmental Concern***

The types of impacts on recreation ACEC management would be similar to impacts from management of biological resources.

Managing the Gunnison Gravels (5 acres) and the Escalante Canyon (1,895 acres) ACECs under Alternative A would prohibit surface occupancy and restrict surface-disturbing activities in those areas. Prohibiting surface disturbance would prevent construction of recreation facilities, including new trails and campgrounds. Reducing surface disturbance would help maintain the naturalness attribute of the physical setting and would provide opportunities for unconfined recreation. However, not allowing for new recreation facilities would limit opportunities to participate in recreation activities.

Alternative B would not manage any ACECs; therefore there would be no additional protection that preserves the naturalness setting in these areas.

Alternative C would manage 2,281 acres of the Escalante Canyon, 4,916 acres of the River Rims (Gunnison River), and 5,626 acres within Big Dominguez Canyon as ACECs. Impacts from prohibiting surface-disturbance activities in the Escalante Canyon and River Rims ACECs would be similar to those under Alternative A. Prohibiting commercial, organized group and competitive SRPs in the River Rims ACEC (exception: river-related permits) would restrict opportunities for these types of events. This would result in reduced opportunities for visitors to participate in competitive and noncompetitive events, and utilize certain commercial outfitting services in this area. However, not allowing special events could enhance the recreational setting and experiences for other users not participating in the events. Closing routes near Colorado hookless cactus in the River Rims ACEC would eliminate trail-based recreation activities in these areas. Designating routes and limiting group size in the Big Dominguez Canyon ACEC would alter the expected recreation opportunities in this area. Limiting group size would set a capacity for use in this area. As a result, demand beyond this capacity would be displaced, and the associated service providers and affected communities could lose desired social and economic benefits. Designating routes would improve the visitor use attribute of the social setting over time; however, this would reduce the availability of trail-based recreation throughout the ACEC.

Alternative D would manage 15 acres as the Gunnison Gravels ACEC, 11,202 acres as the Escalante Canyon ACEC, 1,310 acres as the Gibbler Mountain ACEC, and 17,316 acres along the Gunnison River as an ACEC. Impacts on recreation from these designations would be similar to those in Alternative C; however, the effects would be experienced over a larger area. In addition, the Escalante Canyon ACEC would apply SSR restrictions instead of prohibiting surface-disturbing activities. This would allow facility construction but could result in relocation of the facilities to areas with fewer resource impacts.



The Proposed Plan Alternative would manage 1,310 acres as the Gibbler Mountain ACEC, 15 acres as the Gunnison Gravels ACEC, 2,281 acres as the Escalante Canyon ACEC, and 5,405 acres as the River Rims ACEC. Impacts on recreation in the Escalante Canyon ACEC would be similar to those for Alternative D; however, the effects would be experienced over a smaller area. Impacts on recreation in the River Rims ACEC would be similar to those for Alternative C; however, low impact commercial and organized group permits would be allowed. This would result in opportunities for visitors to experience noncompetitive events and certain commercial outfitting services in this area. However, allowing special events could impact the recreational setting and experiences for other users not participating in the events. Impacts on recreation in the Gunnison Gravels ACEC would be similar to those under Alternative D but in addition, a fence would be constructed to exclude motorized travel. This would limit the area available for such use and the associated user experiences would also be limited. In the Gibbler Mountain ACEC, route density would be reduced as much as possible within 200 meters of BLM sensitive plant occurrences which could reduce opportunities for trail-based recreation in the ACEC. In addition, surface-disturbing activities would be prohibited in a portion of the ACEC which would preclude development of facilities that may be needed in the area to support recreational use.

### ***Impacts from Management of National Trails***

Increased management of the Old Spanish NHT could provide additional opportunities for activities and experiences, and foster an appropriate behavior that protects the NHT's setting. However, these opportunities could displace recreationists and visitors to the D-E NCA that are interested in other forms of recreation. Adding facilities to support these activities and experiences would change undeveloped settings and opportunities for experiences such as adventure, exploration, solitude, and escape from noise and crowds.

A lack of supporting management objectives and actions for the Old Spanish NHT under Alternative A would limit additional opportunities for activities and experiences. Lack of a management presence would not encourage appropriate behavior that protects the Old Spanish NHT and the recreation setting.

Under all action alternatives, the BLM would manage the entire Hunting Ground as the Trail Management Corridor (23,131 acres). Management actions to improve opportunities for trail-related experiences within this Corridor would provide additional opportunities for activities and experiences. Under Alternative D, specific outcome objectives related to the Old Spanish NHT would enhance opportunities for NHT-related activities and experiences. However, this management approach could displace recreationists and visitors to the Hunting Ground area of the D-E NCA that are interested in other forms of recreation, particularly those seeking opportunities for motorized recreation.

### ***Impacts from Management of Wild and Scenic Rivers***

Recreation activities and facility development may be restricted if found to adversely impact ORVs, the free-flowing condition, or the tentative classification of the affected segment. Recreation settings would be protected by tentative classifications.

Under Alternative A, all segments would remain eligible and be managed with interim WSR protection. Recreation activities and facility development would be restricted as necessary to protect the free-flowing condition, ORVs, and the tentative classifications. Recreation was identified as one of the ORVs in Big Dominguez Creek Segment 1, Escalante Creek Segment 1, and Gunnison River Segments 1 and 3. As such, WSR protective management would protect

recreation in these areas. Undeveloped recreation settings would be protected along segments with a wild or scenic tentative classification (Gunnison River Segment 1, Big Dominguez Segments 1 and 2, Little Dominguez Segments 1 and 2, Rose Creek, Escalante Segment 1, and Cottonwood Creek).

Under Alternative B, only parts of Gunnison River Segments 1 and 3 and Cottonwood Creek would be determined suitable. All other stream segments would be found not suitable and released from further WSR study. The impacts along the suitable segments would be similar to those in Alternative A. Impacts on recreation from a not suitable determination would be negligible.

Under Alternative C, all segments would be determined suitable. Since WSR interim protection is similar for eligible and suitable segments, the impacts on recreation would be similar to those for Alternative A.

Under Alternative D, all segments would be determined not suitable and released from further WSR study. Impacts on recreation from a not suitable determination would be negligible.

Under the Proposed Plan Alternative, only parts of Cottonwood Creek would be determined suitable. All other stream segments would be found not suitable and released from further WSR study. The impacts along the suitable segment would be similar to those in Alternative A. Impacts on recreation from a not suitable determination would be negligible.

### ***Impacts from Management of Watchable Wildlife Areas***

Managing the Escalante Canyon Watchable Wildlife Area under Alternative D and the Proposed Plan Alternative would provide additional, improved wildlife viewing opportunities in the decision area.

## **Summary of Impacts from Alternatives**

Under Alternative A, there would be no designated RMAs. The results of management specific to SRMAs and ERMAs would not be expected. There would be no protection of recreation settings, activities, and outcome opportunities. Over time, recreation opportunities would be lost where recreation conflicts with other recreation users and resource uses, primarily livestock grazing and lands and realty. Seasonal crowding at attractions may change user enjoyment of the area, because use exceeds management capability.

Under Alternative A, the BLM would expect more conflicting user interactions than under other alternatives due to minimal recreation guidance under existing plans and limited separation of recreation uses outside the Wilderness. Since all areas outside the Wilderness would be open to all types of recreation, a wide spectrum of different recreation opportunities is not provided. Only 1) wilderness recreation and 2) recreation that includes all activities, without separation in time or space, are being provided. Because areas outside the Wilderness would be open to all types of recreation, non-motorized non-mechanized users seeking close-to-home, developed recreation (rather than wilderness recreation) would be limited to areas that also included motorized and mechanized activities.

Under Alternative B, a large portion of the D-E NCA would be designated as an ERMA, where the principal recreation activities would be protected and supported and where recreation would be managed commensurate with other resources. There would be no SRMA management; therefore, recreation outcomes would not be protected under this alternative. Over time, specific

valued outcomes desired by current visitors, service providers, and affected communities may not be available. However, opportunities for a variety of recreation activities would be protected. Recreation management actions to protect and provide recreation activity opportunity (trail design, construction, maintenance, and access points) would help mitigate conflict among user groups, between other resource uses, and with important biological and cultural resources. Restricting recreation throughout the D-E NCA to meet cultural and biological resource objectives would reduce opportunities to participate in recreation activities, or to enjoy the expected recreation setting, more than under Alternative A.

Under Alternative B, the BLM would expect less conflicting user interactions compared to Alternative A. This is because under this alternative, recreation area (ERMA) guidance would target certain recreation activities, thereby creating a broader spectrum of recreation opportunities. This alternative is similar to Alternative A in that ERMA management does not provide separation outside the Wilderness for non-motorized non-mechanized users. Therefore, the potential for conflicting user interactions would be expected.

Under Alternative C, recreation decisions to designate two SRMAs (Cactus Park and Gunnison River) would provide long term protection of specific recreation outcomes and settings in those areas. However, other recreation outcomes would not be protected in these areas. Throughout the remaining areas of the D-E NCA, recreation would be managed with no RMA designation and impacts would be the same as under Alternative A. Over time, recreation opportunities would be lost where recreation conflicts with other resource uses, primarily livestock grazing and lands and realty. Due to more ambitious biological and cultural objectives under Alternative C, restrictions on recreation activities would be greater than under any other alternative; further reducing opportunities to participate in recreation activities, or to enjoy the expected recreation setting. Alternative C does not provide a wide spectrum of recreation opportunities. Therefore, while conflicting interactions under Alternative C between recreational users would be less than under Alternative A, there would be an increase in conflicting interactions between recreation users and the BLM.

Under Alternative D, the D-E NCA (except the Dominguez Canyon Wilderness area) would be designated as RMAs. The Sawmill Mesa/Wagon Park area would be managed as an ERMA. The remaining areas would be managed as SRMAs, which would provide targeted experiences and outcomes that benefit some users while displacing others who are seeking different experiences and outcomes. Designating a large portion of the D-E NCA as SRMAs would provide long term protection of specific recreation outcomes and settings in much of the D-E NCA, and recreation activities would be protected throughout the remaining areas of the D-E NCA. Due to less ambitious biological and cultural objectives under Alternative D, restrictions on recreation activities would be fewer than Alternatives B and C.

BLM management under Alternative D would provide a wider range of recreation opportunities and separation of recreational uses than under Alternative A. Alternative D would provide the most specific management of any alternative relative to recreation activities, settings, and outcomes. Therefore, the BLM would expect less conflicting user interaction under Alternative D compared to the other alternatives.

Under the Proposed Plan Alternative, a large portion of the D-E NCA would be designated as an ERMA (Hunting Ground, Ninemile Hill, East Creek, and Sawmill Mesa/Wagon Park), where the principal recreation activities would be protected and supported and where recreation would be managed commensurate with other resources. The remaining areas would be managed as

SRMAs, which would provide targeted experiences and outcomes that benefit some users while displacing others who are seeking different experiences and outcomes. Designating a large portion of the D-E NCA as an ERMA would protect and support recreation activities in those areas; however, specific recreation outcomes and settings would only be protected in the smaller portion of the D-E NCA designated as an SRMA. Like Alternative D, less ambitious biological and cultural objectives under the Proposed Plan Alternative would result in fewer restrictions on recreation activities than Alternatives B and C.

The BLM would expect user interactions under the Proposed Plan Alternative to be similar to those described under Alternatives B and D. Where management either results in separation of uses in time and space or provides specific management objectives (e.g., SRMAs), the BLM would expect fewer conflicting user interactions. However, because ERMA management would not provide specific management for the separation of recreation users outside the Wilderness, there would be a potential for conflicting user interactions in these areas, except within the Ninemile Hill ERMA. This ERMA would protect non-motorized and non-mechanized activities. Therefore, the BLM would expect less conflicting user interaction in this area due to separating potential conflicting interactions.

## Cumulative Impacts

The CIAA used to analyze cumulative impacts on recreation resources includes the planning area and extends along major roads, trails, and rivers where management inside the planning area could impact use outside the planning area boundary.

At the broadest level, the physical, social, and operational recreation character of BLM public lands is quickly changing from natural to more developed, from less crowded to more contacts with others, and from less restrictive to more rules and regulations. These changes would impact the activity opportunities that can be offered and the recreation experience and benefit opportunities that can be produced by land managers and partners.

Past and present actions that have had, and continue to have, cumulative impacts on recreation include surrounding BLM and U.S. Forest Service management plans, increased visitation (especially from residents within the planning area and those from the surrounding region), local community expansion, advances in outdoor recreation equipment, and management in existing SRMAs and ERMAs in adjacent Field Offices.

Forest plans for adjacent National Forest System lands and RMPs for adjacent BLM-administered lands have closed areas and routes to motorized recreation, causing users to move to BLM-administered lands in the planning area.

Increasing urban and suburban populations proximate to the planning area have greatly increased the level of recreational use on BLM-administered lands. There is a strong correlation between population growth, visitation, and recreation; in large part, this is because many new residents have moved to the area specifically because of easy access to recreational opportunities on BLM-administered lands. The expanding suburban development footprint has also placed many new neighborhoods directly adjacent to BLM property boundaries, resulting in increased trespass onto private property and resource impacts from private property owners accessing public lands from adjoining private land (e.g., social trailing).

The combination of the region's growing population, the D-E NCA planning areas' longer season of use in comparison to many Colorado destinations, and the bounty of desirable recreation settings have combined to greatly increase use in the planning area.

Advances in technology are at least partly responsible for increased recreation across the planning area. Motorized vehicles are more capable of accessing previously remote areas of the D-E NCA, improvements in mountain biking have made that activity increasingly popular, and enhancements in equipment and clothing have made day hiking and camping more accessible to more people.

Reasonably foreseeable trends that would result in cumulative impacts on recreation include continued growth patterns in demand for all recreational experiences, increased demand for close-to-home recreation opportunities for local residents, continued and increased visitation from a growing regional population, and increased popularity of adjacent public lands and private resorts.

#### **4.4.2. Scientific Use**

This section discusses impacts on scientific use from proposed management actions of other resources and resource uses. Existing conditions concerning science are described in section 3.3.2, Scientific Use.

#### **Methods of Analysis**

Adverse impacts on scientific use are generally the results of activities that hamper the BLM's ability to gain scientific understanding of the D-E NCA, conduct internal monitoring, and discourage partnerships and data sharing with other agencies and institutions. Beneficial impacts on scientific use are generally the results of activities that improve the BLM's ability to gain scientific understanding, conduct internal monitoring, encourage partnerships and data sharing.

##### ***Indicators***

Indicators of impacts on science including the following:

- The ability or inability to gain scientific understanding of D-E NCA resources and landscapes.
- The ability or inability to apply scientific understanding to management, education, and outreach.
- Whether proposed management would further the scientific purposes for which the Conservation Area is established.

##### ***Assumptions***

The analysis includes the following assumptions:

- The D-E NCA must conserve and protect the scientific resources for which it was designated.
- The facilitation of scientific understanding of the D-E NCA would be consistent with the BLM National Landscape Conservation System science strategy (BLM 2007a) and the BLM science strategy (BLM 2008c).

- Internal science programs would continue under each alternative such that the BLM could effectively monitor the status of priority species and vegetation and other resources.
- Once a Record of Decision has been approved for the D-E NCA, BLM staff will identify goals, objectives and actions related to monitoring and research.

Implementing management actions for the following resources would have negligible or no impact on science and are therefore not discussed in detail: air resources, education, land tenure and land use authorizations, national trails, scenic values, and transportation and travel management.

## **Direct and Indirect Impacts**

### ***Impacts from Management of Geological and Paleontological Resources***

Actions that maintain paleontological values would strengthen scientific understanding of the D-E NCA.

Paleontological monitoring, clearances, surveys, and mitigation could enhance overall scientific knowledge and understanding of the D-E NCA. In general, monitoring, maintenance, and protections of geologic and paleontological resources would help to promote an atmosphere in which scientific values were also protected. Monitoring is equally emphasized across the four action alternatives, but Alternative C calls for the most ambitious inventory of PFYC Class 4 and 5 areas, making it the alternative with the greatest impact on science.

### ***Impacts from Management of Priority Species and Vegetation, Special Status Species and Natural Communities, and Non-Special Status Fish and Wildlife***

A focus on maintaining or enhancing priority species and vegetation necessitates science and research and would improve scientific understanding within the decision area.

In general, Alternative C would have the greatest impact on science through the need for additional research to enhance attributes of priority species and vegetation communities that are currently in “good” or “very good” condition. Alternative D would have similar impacts, but because priority vegetation objectives are not as ambitious, less scientific research would be necessary, thereby limiting growth in science. Impacts under the Proposed Plan Alternative would be similar to those under Alternatives C and D, because desired attributes generally follow those two alternatives. Alternatives A and B place no or less emphasis, respectively, on the conditions of priority species and vegetation and therefore would have less impact on science, because less research would be conducted. Under the Proposed Plan Alternative, establishing research or pilot plots in D-E NCA to determine successful treatment prescriptions in sagebrush shrublands would increase scientific knowledge of this plant community.

### ***Impacts from Management of Noxious and Invasive Weeds***

Alternatives that promote active control of noxious and invasive weeds would offer an opportunity to learn more about methods to efficiently treat and monitor weeds. Likewise, alternatives that contain less or no active weed management would add to scientific knowledge about the spread of noxious and invasive weeds and their relationship to native vegetation.

A continuation of current management under Alternative A would provide the fewest measures for preventing and responding to noxious and invasive weed infestations and would therefore have the most opportunities for researching the spread of weeds. Although Alternative B contains

additional partnership measures to prevent and respond to weed infestations, its emphasis on natural processes and restricting allowable uses would still result in impacts related to researching the spread of weeds. Impacts under Alternatives C, D, and the Proposed Plan Alternative, which propose the most actions aimed at controlling weed infestations, would be most apparent in terms of increased opportunities to research the effectiveness of weed management actions.

### ***Impacts from Management of Fire and Fuels***

Allowing a range of fuel treatment options and providing the possibility to use unplanned wildfire for multiple objectives (including resource benefit) where appropriate provides greater opportunities for science and researching the effectiveness of these actions.

Current management under Alternative A emphasizes full suppression on the portion of the decision area previously managed as part of the GJFO. Only a limited number of hazardous fuel projects have occurred in higher elevations on the northwest portion of the decision area, providing few opportunities for science.

Alternative B would allow unplanned ignitions for multiple objectives (including resource benefit) over the greatest area (208,568 acres), but the overall management theme from this alternative would be a decrease in the fire and fuel program's flexibility and efficiency in mitigating against unplanned, damaging fires, because Alternative B would only allow minimal manipulation of fire and fuels and would allow fewer vegetation treatments. This alternative would fewer opportunities for science than the alternatives described below.

Despite allowing unplanned ignitions for multiple objectives (including resource benefit) on fewer acres (182,420, 169,893, and 208,565 acres, respectively), fire and fuel management under Alternatives C, D, and the Proposed Plan Alternative would emphasize a suite of fuel treatments (mechanical, chemical, and biological) and would provide the most management flexibility of any alternatives, resulting in the greatest opportunities for scientific inquiry.

### ***Impacts from Management of Soil and Water Quality***

Actions that affect fluctuations in soil and water quality would improve opportunities for scientific inquiry. Because no alternatives would measurably diminish soil and water quality, it is assumed that the actions that most aggressively improve soil and water quality would have the greatest impact. Alternative B, which emphasizes a passive management approach to degraded and eroding landscapes and does not address management to correct morphologic destabilization, would provide the fewest opportunities to research soil and water management. Alternative A contains additional actions to improve soil and water quality and Alternatives C, D, and the Proposed Plan Alternative contain additional management actions that promote active management of soil and water quality. Alternative C, in particular, includes unique actions to rehabilitate nonessential routes and mitigate damage to biologic soil crusts, the effectiveness of which would be bolstered by the prohibition on surface-disturbing activities within 30 meters (98 feet) of ephemeral streams.

### ***Impacts from Management of Scientific Use***

Actions that direct additional scientific research, collaboration with external research partners, or identify data needs would improve science.

Goals across all alternatives would improve science in the decision area, but the action alternatives contain more specific management actions that would better direct scientific research, more

effectively protecting this resource. Alternative C contains the greatest emphasis on internal research and accessing external resources, resulting in a more intensive, hands-on scientific approach. Impacts from scientific actions under Alternative D and the Proposed Plan Alternative would be similar to those under Alternative C but would place less emphasis on external partners, potentially hampering efforts to evaluate D-E NCA resources. Alternative B places the least emphasis on intensive or resource-disturbing research of the action alternatives. Other alternatives propose monitoring for outcome attainment in a select list of recreation management areas. However, the Proposed Plan Alternative provides guidance for determining social and economic non-market and market economic benefits for the entire NCA. This would improve the long-term scientific understanding of the NCA.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Managing lands for wilderness characteristics would impact scientific resources by providing low impact, relatively undisturbed reference sites for study and comparison. Impacts would be greatest under Alternative B, which would manage 21,816 acres for wilderness characteristics, followed by the Proposed Plan Alternative which would manage 13,597 acres for wilderness characteristics. Alternatives A, C, and D would potentially result in a loss of research opportunities, because no lands would be managed for wilderness characteristics.

### ***Impacts from Management of Cultural Resources***

Actions to preserve cultural sites and make them available for scientific use would improve science. There would be little difference in impacts from the four alternatives, because all would allocate sites to scientific use, assisting with research and data recovery efforts, and improving scientific understanding of the decision area's cultural resources. However, limiting archaeological excavation in certain areas or on certain types of sites under Alternative C could reduce opportunities for scientific inquiry. Alternative D would have the greatest impact on science by fostering research of scientifically valuable archaeological resources, testing of "needs data" sites, and research of excavation of eligible sites.

### ***Impacts from Management of Wilderness***

Managing Wilderness would impact scientific resources by providing low impact, relatively undisturbed reference sites for study and comparison. Using monitoring devices in Alternative B, and to a greater extent in Alternatives C, D, and the Proposed Plan Alternative, would enhance scientific understanding of wilderness values. Otherwise, because Wilderness acreages would not change under different alternatives and because of legislative constraints on Wilderness management that need to be applied across alternatives, there would be a negligible difference in impacts across the alternatives.

### ***Impacts from Management of Livestock Grazing***

Management of livestock grazing allotments provides important study opportunities for research, primarily through the ability to measure the impacts of grazing (or its absence) on soils and vegetation. By proposing the most stringent controls on livestock grazing, Alternative B would provide the most opportunities for researching the effects of grazing exclusion on the landscape. Under Alternatives C and the Proposed Plan Alternative, less stringent actions for utilization levels, active movement, and seasonal restrictions would result in greater opportunities to research the ecological impacts of livestock grazing. These opportunities would be more widespread under Alternatives D and A, where the fewest restrictions are proposed.



### ***Impacts from Management of Recreation***

Focused recreation management (e.g., designation and monitoring of Recreation Management Areas) would provide opportunities to study sustainable use and improve the body of science relating to recreation ecology, visitor preferences, and social and economic effects of the D-E NCA. The Proposed Plan Alternative would provide the greatest opportunity for scientific research through the designation of 128,104 acres of SRMAs and ERMAs. Under Alternative A, there would be zero acres of SRMAs and ERMAs. Alternative C would designate 38,719 acres of SRMAs and ERMAs. Alternative B would designate 109,979 acres of SRMAs and ERMAs, while Alternative D would designate 131,095 acres of SRMAs and ERMAs.

### ***Impacts from Management of Areas of Critical Environmental Concern***

Managing ACECs would improve scientific resources by providing low impact, relatively undisturbed reference sites for study and comparison. Research opportunities would be most widespread under Alternative D, where 29,663 acres of ACECs would be designated. Alternatives A (1,900 acres), C (12,823 acres), and the Proposed Plan Alternative (9,011 acres), would provide opportunities for research. Alternative B, which would not designate any ACECs, would result in a loss of potential research opportunities.

### ***Impacts from Management of Wild and Scenic Rivers***

Managing WSRs would improve scientific resources by providing low impact, relatively undisturbed reference sites for study and comparison. Alternatives A, B, and C would provide research opportunities through the management of stream segments as eligible or suitable. Opportunities for science would be greatest under Alternative C, where all eligible segments would be managed as suitable and surface-disturbing activities would be most limited. Opportunities for scientific activities would be fewer under Alternative B and the Proposed Plan Alternative but would still be available on the 3,728-acre Cottonwood Creek segment (Alternative B and the Proposed Plan Alternative) and the 5,299-acre Gunnison River segments (Alternative B). Alternative D, which would release all eligible segments, would result in a loss of potential research opportunities.

### ***Impacts from Management of Wilderness Study Areas***

Managing the WSA would impact scientific resources by providing low impact, relatively undisturbed reference sites for study and comparison. The only difference across the five alternatives would be preserving wilderness characteristics under Alternative B if the WSA was released by Congress. This action would also preserve opportunities to study low impact, relatively undisturbed reference sites (the other three alternatives would not preserve wilderness characteristics if the WSA is released by Congress and would result in the loss of low impact, relatively undisturbed reference sites).

### ***Impacts from Management of Watchable Wildlife Areas***

The designation of a watchable wildlife area would provide important study areas to inform monitoring and scientific inquiry of priority species and vegetation. This opportunity would only be realized under Alternatives D and the Proposed Plan Alternative, which propose the Escalante Canyon Watchable Wildlife Area. Management actions under both alternatives are identical, meaning impacts on science would be consistent.

## Summary of Impacts from Alternatives

Implementing any alternative would result in beneficial impacts on science, but the action alternatives contain more specific management actions that would better direct scientific research and more effectively protect this resource. Alternative C contains the greatest number of resources and uses with an emphasis on internal research and accessing external resources, resulting in a more intensive, hands-on scientific approach. Impacts under Alternative D and the Proposed Plan Alternative would be similar to those under Alternative C, but fewer management actions would emphasize utilizing external partners, potentially hampering efforts to evaluate D-E NCA resources. Across all resources and uses, Alternative B places the least emphasis on intensive or resource-disturbing research of any action alternative. This alternative would result in adverse impacts on scientific use.

## Cumulative Impacts

The CIAA used to analyze cumulative impacts on science follows fourth-order watershed boundaries that completely or partially overlap with the planning area. The fourth-order watersheds are used as the basic unit of analysis, because the scope of cumulative influence would be at the watershed scale and is not expected to extend beyond this scale.

Reasonably foreseeable past, present, and future actions that may impact science include actions by the BLM within the planning area and actions by other land owners on private land. In addition to the current scientific practices discussed in Chapter 3, scientific research in similar ecosystems by external partners (e.g., universities, nonprofits, and local, State, and Federal agencies) would contribute to the body of knowledge that helps facilitate decision-making that is based on the best available science. All alternatives are expected to contribute to the growth in scientific understanding, but it would be emphasized most strongly within the decision area under Alternative C.

### 4.4.3. Educational Use

This section discusses impacts on educational use from proposed management actions of other resources and resource uses. Existing conditions concerning education are described in section 3.3.3, Educational Use.

## Methods of Analysis

Adverse impacts on educational resource uses are generally the result of activities that hamper the BLM's ability to fully communicate actions and decisions as well as scientific support for actions and decisions to the public. Beneficial impacts on educational resource uses are generally the result of activities that improve the BLM's ability to fully communicate actions and decisions as well as scientific support for actions and decisions to the public.

### ***Indicators***

Indicators of impacts on education include the following:

- The ability or inability to provide public education opportunities that increase the awareness, understanding, and appreciation of the resources and stewardship values relevant to the D-E NCA.

### ***Assumptions***

The analysis includes the following assumptions:

- The D-E NCA must conserve and protect the educational resources for which it was designated;
- Under all alternatives the BLM would continue required information sharing and partnership opportunities related to education.

Implementing management actions for the following resources would have negligible or no impact on education and are therefore not discussed in detail: fire and fuels, transportation and travel management, soils and water quality, Wilderness, lands with wilderness characteristics, air resources, land tenure and land use authorizations, WSAs, WSRs, and ACECs.

## **Direct and Indirect Impacts**

### ***Impacts from Management of Geological and Paleontological Resources***

The protection of geological and paleontological resources would help to maintain or improve the state of educational resources. In turn, the ability to experience educational opportunities would stay intact.

Under Alternative A, allocating sites for education and interpretive use on a case-by-case basis and managing the Gunnison Gravels Research Natural Area as a geologic research and educational site would enhance educational opportunities only in site-specific locations.

Under Alternative B, the BLM would not identify and allocate sites for interpretation, thus eliminating opportunities for education.

Alternatives C, D and the Proposed Plan Alternative provide the most management direction for improving education within the decision area. Under these alternatives, visitors' understanding of the D-E NCA would be improved by identifying sites (including active or retired research sites) for education and interpretive use by the public and providing public education opportunities through self-guided exploration. Opportunities for education would be greatest under Alternatives D and the Proposed Plan Alternative, because more sites would be allocated for interpretation under those two alternatives.

### ***Impacts from Management of Priority Species and Vegetation, Special Status Species and Natural Communities, and Non-Special Status Fish and Wildlife***

Management of priority species and vegetation can provide unique education opportunities for important and potentially scarce resources by improving species' habitat and vegetation conditions. Alternative C, with its objective to maintain or enhance all rankings for priority species and vegetation attributes that are currently in "good" or "very good" condition, would

provide the most opportunities for educational and interpretive opportunities that increase the awareness, understanding, and appreciation of these resources. Similar impacts would be expected under Alternatives B, D, and the Proposed Plan Alternative, but Alternatives D and the Proposed Plan Alternative would place a greater emphasis on active management, providing more opportunities to translate management actions into educational opportunities. Alternative A would not tie management actions to maintenance or enhancement of priority species and vegetation levels, meaning education would be tied to specific species and habitats, potentially at the loss of a decision area-wide educational message.

### ***Impacts from Management of Noxious and Invasive Weeds***

Management of noxious and invasive weeds can provide opportunities for education through improved opportunities to learn about the spread and control of noxious and invasive weeds. Impacts on education would vary only slightly as many management actions to control noxious and invasive weeds are similar or the same across alternatives. Containing or eradicating all State-listed species (as opposed to only A- or B-listed species) under Alternatives C and the Proposed Plan Alternative would create the most opportunities for learning about weed control.

### ***Impacts from Management of Cultural Resources***

In general the preservation and protection of cultural resources, including interpretive sites, would enhance opportunities for education and tourism in the D-E NCA, further building and strengthening the educational identity and values in the D-E NCA.

Under Alternative A, there are no actions or objectives pertaining to education as a resource and therefore no impact.

Alternative B would promote educational partnerships and programs through identifying measures to organize and conduct educational programs for the public, school groups, vocational archaeology groups, project proponents, permittees, contractors, and others about cultural resources ethics, and by encouraging their help in reporting new discoveries and incidents of vandalism.

Alternatives B, C, D, and the Proposed Plan Alternative would have site-specific impacts on education through the encouragement of education and interpretation in the Big Dominguez Canyon Heritage Area.

Alternatives D and the Proposed Plan Alternative would have site-specific impacts on education through the encouragement of education and interpretation in the Little Dominguez Canyon Heritage Area.

Alternatives D and the Proposed Plan Alternative would have site-specific impacts on education through the encouragement of education and interpretation in the Leonards Basin Heritage Area.

Alternatives B, C, D, and the Proposed Plan Alternative would also impact education by implementing ongoing educational programs for the public, school groups, vocational archaeology groups, project proponents, permittees, contractors, and others about cultural resource ethics. This action would increase educational understanding of the decision area across a wide spectrum of visitors.

Alternatives D and the Proposed Plan Alternative would provide the greatest opportunities for improving education. Most notably education would be a management focus for the Rambo/Little

Dominguez Canyon Heritage Area and other heritage areas. Cultural resource management would also be focused on the education and interpretation of prehistoric rock art. In addition, Alternatives D and the Proposed Plan Alternative would encourage collaboration and partnerships with the public and other interest groups to help preserve cultural resources within the D-E NCA and their subsequent educational value.

### ***Impacts from Management of Scenic Values***

Management of scenic values could enhance educational opportunities and values under some alternatives. Increased acreages of VRM Classes I and II, as well as construction and facilities along the NHT corridor that support retracement and interpretive opportunities, would enhance the educational values within the D-E NCA.

Alternative A would facilitate fewer enhancements of educational values than the action alternatives, because it is the only alternative where portions of the decision area would be designated as VRM Class III.

Alternative D enhances experiential education opportunities and promotes interpretive sites within the D-E NCA by allowing the construction of facilities within the Old Spanish NHT corridor that support retracement and interpretive opportunities. Similarly, Alternatives B, C, and the Proposed Plan Alternative would enhance education by allowing construction of facilities that support interpretive opportunities.

### ***Impacts from Management of Recreation***

Recreation is closely tied to education as a resource, because recreation affords visitors to the D-E NCA the opportunity to travel throughout the D-E NCA and experience outdoor opportunities firsthand. Recreation in general would have direct impacts on education, because recreation inherently includes an educational component (i.e., visitors must use maps, brochures, and informational kiosks, in order to educate themselves about recreational opportunities in the D-E NCA). Recreation would have indirect impacts on education in the sense that, as more people recreated in the D-E NCA, the more exposure there would be to interpretive sites and educational opportunities.

Impacts from recreation would be similar under Alternatives A and B, with minimal actions directed toward education. Alternative D would most strongly enhance educational opportunities and values within the D-E NCA and increase collaborative partnership and data sharing with other agencies and institutions. For example, cultural and historic and biological and ecological education would be emphasized in the Hunting Ground RMA, Big Dominguez Canyon Heritage Area, Rambo/Little Dominguez Canyon Heritage Area, Leonards Basin Heritage Area, and Escalante Canyon Watchable Wildlife Area to help promote learning about the past and the alternative encourages external partnerships to promote learning about recreational opportunities.

The types of impacts under Alternative C and the Proposed Plan Alternative would be similar to those under Alternative D, but only two areas would be targeted as outdoor classroom/education emphasis areas.

The presence of recreational target shooting can affect the suitability of an area for use as an outdoor classroom. Schools and other educators may choose not to bring students to areas with frequent recreational target shooting activity due to real or perceived safety risks associated with target shooting. Currently popular areas for educational trips include Wilderness Zone 1, the

Gunnison River, and Escalante Canyon. Under Alternative A, target shooting would be allowed throughout the D-E NCA, with resulting impacts on opportunities for education throughout the D-E NCA. Under Alternative B, target shooting would be closed throughout the D-E NCA, which would eliminate impacts on educational opportunities from this activity (note that restrictions on recreational target shooting do not apply to hunting). Under Alternative C, the BLM would close 50 percent of the D-E NCA to target shooting. Of the areas currently popular for educational use, target shooting would not be allowed along the Gunnison River and in Wilderness Zone 1 and educational opportunities in these two areas would not be impacted by target shooting. Target shooting would be allowed in Escalante Canyon and educational opportunities may be negatively impacted in this area. Under Alternative D, the BLM would close 75 percent of the D-E NCA to target shooting. This closure would cover all three areas that are currently popular for educational use, which would prevent impacts of target shooting to educational opportunities in these areas. Under the Proposed Plan Alternative, the BLM would close approximately 5 percent of the D-E NCA to target shooting. This closure would include all three areas that are currently popular for educational use, and would therefore prevent adverse impacts of target shooting on educational opportunities in these current high use educational areas.

Like other forms of recreation, target shooting also has an educational component. Areas open to target shooting would allow that educational component to continue. Alternative B, which closes the entire D-E NCA to target shooting, would force users to shoot on lands outside the decision area and would result in a complete loss of educational opportunities associated with target shooting. In contrast, Alternative A and the Proposed Plan Alternative would manage 100 percent and 95 percent of the decision area, respectively, as open to target shooting and educational opportunities associated with that activity could continue in all or nearly all portions of the decision area.

### ***Impacts from Management of Scientific Use***

In general, actions that improve science would benefit education through the improved ability to communicate decisions and actions and the greater body of knowledge that could enhance efforts to improve visitors' awareness, understanding, and appreciation of the decision area resources. There would be little variation across the alternatives, but an emphasis on external research partnerships under Alternative C would likely provide the most emphasis on science, which would increase opportunities for educational learning in the decision area.

### ***Impacts from Management of Educational Use***

Efforts to educate visitors about the D-E NCA would improve the BLM's ability to protect resources through enhanced awareness of their value and importance. Alternatives A and B provide only a minimal amount of facilities or opportunities for learning.

There would be little difference in impacts from education between Alternatives C and D. These two alternatives would provide improved opportunities for education by promoting the development of educational facilities and providing outdoor classroom opportunities. In addition, Alternative D would manage the most areas for interpretation of natural, geological, and cultural resources, making it the alternative with the greatest impact on education. Impacts under the Proposed Plan Alternative would be similar to those under Alternatives C and D; however, there would be greater flexibility to adjust the methods for monitoring educational outcomes based on changing conditions and needs. This would provide a unique long-term benefit to education within the NCA.

### ***Impacts from Management of Livestock Grazing***

The action alternatives would have a greater impact on education because of specific management actions directed at increasing public understanding of grazing. Under Alternative B, the use of interpretive facilities to facilitate understanding of the role of livestock grazing would increase awareness, understanding, and appreciation of livestock grazing. The use of educational and interpretive messaging under Alternatives C, D, and the Proposed Plan Alternative would have similar impacts but to a slightly lesser degree, as messaging would not likely be as effective as dedicated facilities. Alternative A contains no similar action and would hamper the BLM's ability to provide public education opportunities that increase the awareness, understanding, and appreciation of livestock grazing.

### ***Impacts from Management of National Trails***

Management of the Old Spanish NHT would enhance educational opportunities related to historic and prehistoric resources.

There would be no actions promoting education under Alternative A, and therefore no impacts on education.

There would be little difference in impacts across the action alternatives; all would promote greater opportunities for education than Alternative A by developing auto-tour interpretive opportunities and protecting remnants, ruins, traces, graves, campsites, landmarks, artifacts, and other remains associated with the Old Spanish NHT. A consistent management approach to improve opportunities for trail-related interpretation and education across the trail management corridor (23,131 acres) under all action alternatives would result in beneficial impacts on education. Under Alternative D, management for NHT retracement opportunities would provide the greatest opportunities for education, and the greatest beneficial impacts on education, of the action alternatives.

### ***Impacts from Management of Watchable Wildlife Areas***

Management of the Escalante Canyon Watchable Wildlife Area under Alternative D and the Proposed Plan Alternative would provide improved opportunities for public viewing of wildlife and wildlife-related interpretation and education. This would increase awareness of wildlife resources within the D-E NCA. By not managing a watchable wildlife area under Alternatives A, B, or C, there would be fewer opportunities for interpretation and outdoor classroom education, limiting visitor understanding of watchable wildlife.

## **Summary of Impacts from Alternatives**

Alternatives A and B would provide only a minimal amount of facilities or opportunities for learning (notably, livestock grazing and cultural resources management contain some education emphasis). These two alternatives would result in the fewest beneficial impacts on educational use.

There would be little difference in impacts between Alternatives C, D, and the Proposed Plan Alternative. All three alternatives would provide the most beneficial impacts by promoting opportunities for education through the development of educational facilities and outdoor classroom opportunities. Alternative D would manage the most areas for interpretation of natural, geological, and cultural resources, making it the alternative with the greatest beneficial impact on educational use.

## Cumulative Impacts

The CIAA used to analyze cumulative impacts on education resources includes Mesa, Montrose, and Delta Counties. This area encompasses many of the activities aimed at improving public understanding of resources and values similar to those found in the D-E NCA.

Past and present actions that have had, and continue to have, cumulative impacts on education include regional elementary, secondary, and postsecondary educational curriculums, nonprofit educational organizations' growth, and partnerships between land managers and public interest groups. Regional population growth and the increase in enrollment at Colorado Mesa University have exposed more students to curriculums that foster educational understanding of public lands and their values.

Reasonably foreseeable trends that would result in cumulative impacts on education include actions by the BLM within the planning area and actions by other educational entities within the CIAA. In addition to the current educational programs discussed in Chapter 3, continued growth patterns in demand for interpretive and educational experiences, close-to-home learning opportunities for local residents, increased visitation from a growing regional population, and increased popularity of adjacent public lands would drive public awareness, understanding, and appreciation of the resources and stewardship values relevant to the D-E NCA.

### 4.4.4. Livestock Grazing

As directed in the Omnibus Public Land Management Act of 2009 (Public Law 111–11), except as provided in paragraph (2), the Secretary shall issue and administer any grazing leases or permits in the Conservation Area in accordance with the laws (including regulations) applicable to the issuance and administration of such leases and permits on other land under the jurisdiction of the BLM. The grazing of livestock in the Wilderness, if established as of the date of enactment of this Act, will be permitted to continue. This section discusses impacts on livestock grazing from proposed management actions of other resources and resource uses. Existing conditions concerning livestock grazing are described in section 3.3.4, Livestock Grazing.

## Methods of Analysis

Livestock grazing is analyzed using the indicators and assumptions included below. Adverse impacts can generally be described in terms of direct closures to grazing, surface use restrictions, or other measures that would require changes in livestock management. Beneficial impacts are generally actions that increase forage availability or quality and actions that increase management flexibility for livestock operators. For the purposes of this analysis, areas available to grazing include all those on which grazing may occur under current and future management; this includes allotted as well as unallotted areas identified as open to grazing and allotted areas open to active movement only (see Glossary). Under Alternative A, unallotted areas are not identified as open, closed, or open to active movement only. However, these acres are functionally open and are therefore included in acres of “available” grazed areas for the purposes of analyzing the impacts of Alternative A.



### ***Indicators***

Indicators of impacts on livestock grazing include the following:

- A decrease in permitted AUMs in areas open to livestock grazing due to various resource issues or conflicts, or cumulative management actions.
- An increase in forage levels that may allow an increase in permitted AUMs across the decision area.
- Restricting or prohibiting the ability to construct or maintain range improvements and conduct treatments (infrastructure and vegetation).
- Closing areas to livestock grazing.
- Changes to the class of livestock permitted.
- Changes to the timing, duration and frequency of permitted use.

### ***Assumptions***

The analysis includes the following assumptions:

- Areas allotted for active movement only would be used only for active movement of livestock from one allotment or pasture to another.
- All new and existing leases and permits would be subject to terms and conditions determined by the authorizing officer to achieve the management and resource condition objectives for the public lands and to meet Land Health Standards.
- Management actions will be in accordance with the Omnibus Public Land Management Act of 2009, Subtitle E; section 4(d)(4) of the Wilderness Act (16 U.S.C. 1133(d)(4)); and the guidelines set forth in Appendix A of the report of the Committee on Interior and Insular Affairs of the House of Representatives accompanying H.R. 2570 of the 101st Congress (H.R. 101-405). Livestock permittees would work toward achieving the Colorado Standards for Public Land Health (see BLM 1997 and Appendix D) on all grazing allotments.
- Construction of range improvements (e.g., fences, pipeline, water wells, troughs, and reservoirs) would result in a localized loss of vegetation cover throughout their useful life. Vegetation would be reestablished through reclamation practices along water pipelines within 5 to 10 years to the extent possible.
- The construction and maintenance of range improvements would continue in the decision area as needed. New range improvements could be subject to limitations as specified in the RMP. Range improvements generally lead to increased livestock distribution and vegetation management, which in turn would support vegetation objectives.
- By definition, in this plan, livestock grazing is not considered a surface-disturbing activity. However, in small isolated areas where livestock concentrate, some surface disturbance would occur.
- Grazing preference is attached to base property owned or controlled by a permittee. The issuance of a grazing permit allocates the permitted use (forage) for livestock grazing to a

permittee based upon their preference (or priority) for the purpose of receiving a grazing permit. Increases in forage availability could result in an increase in permitted AUMs for livestock permittees except when specifically prohibited by RMP management actions.

Implementing management actions for the following resources would have negligible or no impact on livestock grazing and are therefore not discussed in detail: air resources, national trails, and watchable wildlife areas.

## Direct and Indirect Impacts

Impacts on livestock grazing activities are generally the result of activities that affect forage levels, areas open to grazing, class of livestock, season and/or timing of use, the ability to construct range improvements, or activities that result in human disturbance or harassment of livestock within grazing allotments.

Implementation of particular livestock grazing management actions may adversely impact the permittee by increasing their operational cost through more intensive livestock management, season-of use changes, changes in class of livestock, modified grazing systems, construction of range improvements, decreased AUMs or other actions needed to meet priority habitat objectives or provide protection for other resources.

In some cases, specific management actions could enhance rangeland conditions, long-term forage production, and potentially improve animal distribution and livestock health in the long-term. These would be beneficial impacts. For example, construction of range improvements would generally enhance rangeland health in the long term; however construction of the project in the short term may impact the livestock permittee economically. In other cases, rangeland management changes may be designed to provide protection for other resources or resource uses. In these instances, management changes may result in additional limitations on livestock grazing with no changes or enhancement to rangeland conditions. Details for key types of impacts are included below.

An overview of impacts is provided in Table 4.56, Overview of Livestock Grazing Impacts by Alternative.

**Table 4.56. Overview of Livestock Grazing Impacts by Alternative**

	Alternative A	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
AUMs	14,403	10,034	14,185	14,416	14,349
Total Acres Available to Grazing	204,921	188,389	209,059	209,617	206,127
Of Available Acres, Limited to Livestock Active Movement Use Only (Previously Allotted)	8,141	12,756	12,097	6,275	11,938
Limited to Livestock Active Movement Use Only (Previously Un-allotted)	0	0	5,056	240	572
Acres Closed to All Livestock Use	0	21,589	918	361	3,850

Source: BLM 2012i

### ***Impacts from Management of Priority Species and Vegetation and Noxious and Invasive Weeds***

Management of vegetation resources may indirectly affect livestock grazing by improving forage conditions. Vegetation treatments designed to reduce the incursion of non-native annual grasses (i.e., cheatgrass), encroachment of shrubby vegetation, and buildup of biomass in forested areas could have short term effects on livestock grazing through forage removal and required rest periods, but they would generally enhance rangeland conditions, including maintaining or improving the forage base (i.e., the amount of vegetation available for wildlife and livestock use) in the long term (Vollmer and Vollmer 2008; Gottfried and Severson 1994).

In general, priority habitat and vegetation management could impose limitations resulting in reduction of utilization levels, increase in required rest periods, changes in type of livestock and active movement only, lower AUMs, or adjusted timing and other limitations. As a result, costs and time required for livestock management could increase.

Under Alternative A, vegetation treatments would be authorized on a case-by-case basis and may be conducted to meet livestock grazing objectives as well as wildlife or fuel objectives. Conversely, under the other alternatives, vegetation treatments are generally excluded from certain vegetation types and priority is given to treatments to meet objectives for priority vegetation, thereby potentially limiting the ability to manage allotments to improve livestock forage.

In areas where livestock grazing prevents achievement of biological resource objectives, Alternative B restricts or reduces the use whereas Alternatives C and D require more intensive management. The more intensive management may require additional efforts but does not directly lead to a reduction in the use. If intensive management does not achieve objectives, further restrictions or reductions in AUMs may follow.

The Proposed Plan Alternative allows for restriction, adjustment, or intensive management of allowable uses in order to meet priority vegetation objectives. As a result, limitations on permittees would be in place only where needed to meet objectives and would likely be more limited in scope than that under Alternatives C and D.

Management for desert shrub/saltbush communities may directly result in site-specific limitations to livestock grazing. For example, under Alternative B, all allotments with highly degraded desert shrub/saltbush would be closed to livestock use, resulting in potential reduction of AUMs or increased costs and time for livestock management. The allotments impacted are primarily north of the Gunnison River primarily comprised of the salt desert shrub plant community and include Alkali Flats (3,452 acres), Antelope (1,764 acres), Lower Escalante (2,319 acres), and Wells Gulch (6,448 acres).

Under Alternative C, no allotments would be closed, but grazing would be seasonally limited to October to April in areas with degraded desert shrub/saltbush. An exception to this limitation would be allowed if allotment management plans or grazing use agreements authorized grazing during the critical growth period in order to achieve biological objectives. This seasonal limitation, along with providing periodic rest during the active growing season, should lead to improvement in areas not meeting Land Health Standards and should improve forage in the long term.

Seasonal restrictions may have more practical limitations on sheep grazing due to typical use of sheep allotments in early spring. Alternative D would allow for site-specific determination of seasonal limitations, thus limiting impacts on grazing management. The Proposed Plan Alternative would impose limitations similar to that described under Alternative C; however,

seasonal closures would be limited to areas below 6,000 feet, so the impacts would be reduced in scale.

Under Alternative B, additional vegetation management measures limiting forage use may result in an adjustment of permitted AUMs or an increase in labor to improve distribution. Under Alternative C, guidelines limiting forage utilization level to a maximum of 35 percent and 50 percent of current year growth, respectively, may restrict ability of permittees to fully utilize permitted levels of AUMs in areas not meeting Land Health Standards.

Under Alternative D, utilization guidelines are less restrictive, allowing up to 60 percent, providing for more flexibility and fewer impacts on livestock grazing. Under the Proposed Plan Alternative, no specific utilization limits would be in place; seasonal limitations for utilization levels would be on a site-specific basis as needed to meet land health standards. As a result, a greater level of flexibility in grazing management would be allowed in order to address land health concerns. In allotments where there are land health issues (e.g., not meeting standards or meeting standards with a downward trend) with grazing identified as a causal factor, the BLM could require changes to grazing management practices in order to address the issues. Conversely, where there are fewer or no land health issues related to livestock grazing, restrictions would be minimized (based on site-specific conditions) and impacts on permittees would be reduced.

Managing riparian habitat in compliance with priority vegetation objectives has the potential to directly affect livestock grazing through site-specific exclusion of livestock or adjusting season of use and livestock numbers. Allowing riparian habitat to maintain proper functioning condition would benefit grazing livestock by indirectly providing cleaner and more reliable water and more dependable forage.

Management for riparian vegetation would restrict livestock grazing by closing areas to grazing or permitting only active movement, resulting in increased costs when substitute grazing lands are required or livestock must be herded or transported in methods different than those currently utilized. Impacts would be greatest under Alternatives B and C, where areas along defined creeks would be closed to livestock and active movement would be the only use allowed throughout much of the D-E NCA's riparian areas. In particular, Alternative B would close Rose Creek and Upper Escalante Creek to grazing and all other riparian areas would be closed or limited to active movement, resulting in the most restrictions to grazing. Under Alternative C, Rose Creek would be closed and some limited areas (e.g., Cottonwood Creek) would have active movement restrictions lifted.

Alternatives A and D would not close any riparian areas and would have fewer riparian areas where livestock use was restricted to active movement, resulting in fewer impacts. Under the Proposed Plan Alternative, Big and Little Dominguez Creeks, Escalante Creek below the forks, the Dry Fork of Escalante, and Rose Creek would be limited to active movement only, resulting in a limited number of site-specific impacts on livestock grazing. If land health concerns associated with livestock use are documented in other riparian areas, restrictions to active movement may be expanded, with increased level of impacts on permittees' management flexibility and operating expenses.

Protection of seeps and springs may impact ability of permittees to develop water sources for livestock thereby limiting the ability of permittees to improve distribution of their livestock, particularly under Alternative B, where new spring developments, wells and water catchments would be prohibited in seep and spring recharge areas. Under Alternative D, developments would be allowed when consistent with biological resource objectives, allowing for some flexibility for

livestock use. Under the Proposed Plan Alternative, no net gain in capacity would be permitted in seep and spring recharge areas, and developments may be permitted when they would benefit biological resource objectives; therefore greater limitations are likely than under Alternative D.

### ***Impacts from Management of Special Status Species and Natural Communities and Non-Special Status Fish and Wildlife***

Protecting special status species habitat could directly affect livestock grazing by limiting areas open to grazing and seasons of use. Proposed management varies by alternative, but habitat for special status species in the project area, including Colorado hookless cactus, would place limitations on grazing or require mitigation or minimization of activities where livestock grazing is determined to be negatively impacting habitat. This would increase time and money spent by permittees.

Management actions to enhance special status species and fish and wildlife habitat would affect livestock grazing through potential management changes to control livestock distribution and utilization of key habitats.

Impacts from protection of Colorado hookless cactus include exclusion or restriction of grazing in habitat, supporting excellent and good (defined by CNHP) conditions for the Colorado hookless cactus. Under Alternative A, no specific management objectives would impact grazing on the 1,610 acres of habitat available for grazing. Under Alternatives B and C, grazing on approximately 864 and 1,568 acres would be limited by requirements to exclude or minimize grazing. Because more acres overall are available for grazing under Alternatives D and the Proposed Plan Alternative, there would be a corresponding increase in acres with restrictions for Colorado hookless cactus management. For example, under Alternative D, 1,726 acres of Colorado hookless cactus habitat could be impacted by the requirement to minimize impacts from grazing to this priority species.

Similarly, under the Proposed Plan Alternative, 1,615 acres available for grazing (including allotted and unallotted areas) and 109 acres open to active movement only could be affected by requirements to minimize impacts to cactus habitat. For all alternatives, closure of areas could result in loss of AUMs. Minimizing impacts and limitations could result in increased cost for permittees in allotments that contain cactus habitat. Areas most likely to be impacted under all alternatives are those below 6,500 feet in elevation.

Impacts on livestock grazing from desert bighorn sheep habitat management include the discontinuation or limitation of goat and sheep grazing and related costs to permittees. Under Alternative A, management would continue to be on a case-by-case basis with no defined restrictions or limitations.

Under Alternative B, discontinuing domestic goat and sheep grazing would impact the five allotments where permittees currently graze sheep or goats (Wells Gulch, Alkali Flats, Antelope, Lower Escalante, and Cactus Park-Club Gulch) as well as prohibit future goat or sheep grazing operations in the decision area. While permittees would be able to convert current allotments to cattle, the cost to permittees associated with conversion of permits to cattle could be prohibitive and result in a major change to their operation or the hardship of finding grazing lands (private or public) to replace the area lost.

Under Alternative C, impacts would be limited to allotments within suitable and occupied bighorn sheep habitat, where domestic goat grazing would be excluded and domestic sheep grazing

permitted on an allotment-by-allotment basis dependent on the probability of interaction of domestic and wild sheep (see Appendix C, Risk of Association Modeling). Compared with Alternative A, impacts on sheep or goat grazing permittees would be increased, but they would be limited in scope; within allotments with a high probability of interaction, sheep grazing would be prohibited, therefore impacts would be greatest for permittees located within these 2,798 acres, primarily in Cactus Park, Lower Escalante, Wells Gulch, and Alkali Flats Allotments. Within moderate probability allotments, domestic sheep grazing would be permitted but costs and time required for permittees would likely increase due to additional restrictions such as requirements such as control of lambing, breeding, use of guard animals, and removal of sick animals as well as those entering wild sheep occupied range within 24 hours. Such requirements would likely increase costs associated with labor, operations, transportation, and production. Should new information become available on changes to suitable and occupied bighorn sheep habitat, intensity and location of impacts within the project area may change. For this reason, the location and intensity of restrictions on domestic sheep grazing may change over time.

Under Alternative D, impacts from bighorn sheep management would occur in suitable occupied habitat as described above with intensity of impacts on livestock grazing management based on the risk management actions explained in Appendix C. Under this alternative, grazing would be permitted in high and moderate probability allotments with stipulations, including some limitations on herd size and lambing and requirements to remove sick animals as soon as possible.

Impacts from bighorn sheep management under the Proposed Plan Alternative would be based on the management actions chosen depending on level of risk, to minimize association of domestic and wild sheep informed by the risk of association modeling as described in Appendix C. Impacts would be similar to those under Alternative D in that grazing would be permitted in some areas with high and moderate risk of association, but grazing would be accompanied by additional stipulations, including limitations on active movement.

Additionally, converting sheep allotments to cattle allotments in areas with high and moderate risk of association would be encouraged when possible. In the Proposed Plan Alternative, any conversions from sheep to cattle would remain permanent. Restrictions on season of use and level of use for domestic sheep would be used in high, and to a lesser extent moderate, risk allotments.

If domestic sheep mitigation measures were found to be ineffective at preventing association between domestic and wild sheep, then BLM would consider additional measures. These measures, such as removing portions of allotments or converting to class of use to cattle, could increase costs for permittees.

### ***Impacts from Management of Fire and Fuels***

Fuel treatments, including mechanical treatment and prescribed burns, can alter forage availability in the short term. In general, restoring natural disturbance regimes such as fire, and using vegetation treatments to accomplish biodiversity objectives in resilient plant communities, would benefit livestock grazing by maintaining a balance of seral stages and enhancing the forage base (Clark et al. 2007). Required rest periods following treatments would impact livestock operations in the short term.

Under all alternatives, natural unplanned ignitions would be allowed to varying degrees, with Alternative A having the lowest potential acreage and B the highest acreage. Similarly, under Alternative B, fire and fuel conditions would be manipulated to the minimal extent necessary, mostly to protect life and property, while under all other alternatives, fuels and fire would be

managed to protect property as well protect cultural and biological resources. In general, the more area where unplanned fire is allowed for multiple objectives (including resource benefit), the greater the long term potential to improve the forage base and thus benefit livestock grazing.

### ***Impacts from Management of Soils and Water Quality***

Management of soil resources generally fosters healthy plant communities, which can benefit livestock grazing by maintaining or increasing the forage base. Likewise, managing for healthy watersheds provides for necessary water sources and improved forage conditions for livestock grazing in the long term. Protecting water quality and watershed health could require short or long-term changes in livestock management such as deferred or shortened grazing periods, exclusion, establishing riparian pastures, and increased livestock herding.

Under Alternative A, factors effecting soil and water conditions would generally persist, and livestock forage and water is not likely to be improved in the long term.

Under Alternatives B and C, soils protection measures would prohibit surface-disturbing activities in certain areas. This management may improve soil and water conditions in the long term but may restrict grazing management in the short term. For example, requirements to avoid surface-disturbing activities during periods when soil is saturated or frozen and on fragile soils and in areas with ecologically important biological soil crusts, may limit ability to manage livestock or construct range improvements. Fragile soils can be found throughout the planning area and therefore would impact many allotments. The types of impacts would be similar under Alternatives D and the Proposed Plan Alternative, but these alternatives favor less-restrictive SSR surface use restrictions, meaning that surface-disturbing activities would merely be limited, not prohibited.

### ***Impacts from Management of Cultural Resources***

Cultural and paleontological resource management actions would affect relatively small, localized areas, with minimal effects on forage. In general, management actions that result from information provided by cultural resource inventories can limit or eliminate livestock management activities (specifically the presence or location of range improvements) on a case-by-case basis. Changes in grazing management would be made if inventory or monitoring reveals substantial impacts on cultural resources. For example, fencing cultural sites and excluding grazing from these sites could be necessary.

Alternatives B and C would prohibit surface-disturbing activities around defined sites whereas Alternative D and the Proposed Plan Alternative would apply SSR surface use restrictions in these areas and would thus be less restrictive for livestock grazing.

Alternatives C and D include measures for educating the public in regards to historic and current grazing in Big Dominguez Canyon Heritage Area of the D-E NCA, which would increase appreciation for grazing.

Under Alternatives B, C, D, and the Proposed Plan Alternative, livestock grazing could be restricted within the High Park Heritage Area or Leonard's Basin Heritage Area if desired natural landscapes and settings are being degraded, resulting in site-specific limitations for affected permittees.

### ***Impacts from Management of Wilderness***

Existing grazing is permitted within the Dominguez Canyon Wilderness, but the ability of permittees to construct livestock developments, conduct vegetation treatments, and utilize motor vehicles to access livestock may be limited if wilderness characteristics would be degraded. As a result, time or cost may increase for permittees.

Under all alternatives, the construction or installation of new developments, including the use of motorized equipment, would be in accordance with the Wilderness Act. This permits construction of new improvements, with the primary purpose of resource protection. New developments also would be in line with BLM policy and Appendix A, Grazing Guidelines, which permits construction for enhancing the protection of wilderness character. The maintenance of range improvements would be allowed.

Under Alternative A, the construction of seven earthen livestock ponds within the Dominguez Allotment in the Wilderness would allow for improved distribution of livestock for better utilization of available forage for allocated AUMs.

Under Alternative B, there would be strict limitations on vegetation treatments and post-fire rehabilitation, which both generally improve livestock grazing conditions by increasing the forage base. Construction and installation of new developments for livestock grazing would be prohibited unless they prevent degradation of wilderness values or protect public health and safety, limiting the ability for improved livestock management and permittees to manage livestock more effectively. Alternative B would be the most restrictive in terms of new water developments within the Wilderness, with potential impacts on livestock management, particularly in drought years. Within the Dominguez Allotment, no new water developments would be authorized. This would limit management options for the permittee. By failing to improve on current livestock distribution issues within the allotment, Alternative B could degrade land health conditions in the long term.

Under Alternative C, managing for naturalness allows for more opportunity for vegetation treatments or post-fire rehabilitation when needed to meet biological objectives, both of which benefit livestock grazing in the long term. Construction and installation of new developments would be limited and only if necessary to protect or enhance naturalness, supplemental values, opportunities for solitude, or to protect public health and safety. In Alternative C, up to 17 livestock guzzler/catchment water developments may be constructed within the Dominguez Livestock Grazing Allotment inside the Wilderness, thus providing for more opportunities for improved livestock distribution and reducing impacts.

Under Alternative D, developments would be allowed with limitations by wilderness zone, with the most flexible regulations in Wilderness Zone 3. Additionally, under this alternative, up to 17 livestock guzzler/catchment water developments would be allowed within the Dominguez Livestock Grazing Allotment, thereby providing means to distribute livestock and manage effectively reducing impacts on permittees.

Under the Proposed Plan Alternative, construction or installation of livestock developments would be allowed at a reduced scale when necessary to protect wilderness values and enhance wilderness management objectives; up to 11 water developments would be allowed within the Dominguez allotment. This would be in accordance with Section 4(d)(4) of the Wilderness Act and the congressional grazing guidelines. It would allow for some means for permittees to manage livestock. Specific requirements for developments would limit the flexibility in placement.



All alternatives would limit the number of authorized motorized entries by grazing permittees to the minimum amount necessary to maintain existing/necessary livestock facilities and conduct grazing management activities, allowing for continued access for livestock and range improvement management.

Vegetation treatments, including post-fire rehabilitation, generally benefit livestock grazing by increasing the forage base. Alternative B discourages these treatments unless wilderness values are in jeopardy. Alternatives C, D, and the Proposed Plan Alternative provide more opportunity for vegetation treatments to meet biological objectives. This could enhance forage in the long term. Under the Proposed Plan Alternative, however, treatments would be limited to instances where PPSV indicators were fair or poor; therefore, improvements to forage from these treatments would be limited.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Management of lands outside of the designated Wilderness and WSA for the protection of wilderness characteristics could affect livestock grazing by limiting opportunities for new livestock developments such as fences, catchments, and stock ponds. Managing 21,816 acres for wilderness characteristics under Alternative B would have the greatest impact, despite the fact that maintenance and operation of existing and necessary livestock developments would still be allowed. The Proposed Plan Alternative would have some impact, but less so than Alternative B, because fewer acres (13,597) would be managed for protection of wilderness characteristics. Alternatives A, C, and D would have the fewest impacts, as the BLM would not manage any areas outside of the designated Wilderness and WSA for protection of wilderness characteristics.

### ***Impacts from Management of Scenic Values***

VRM Class I or, to a lesser extent, Class II can limit livestock grazing operations through restrictions on range improvements and other facilities. Livestock and their handling facilities may be authorized under all VRM classes; however, the design and placement of new range improvements in VRM Class I and II areas would have to be constructed in such a way as to repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. As a result, the cost of construction of fences, water tanks, and other range improvements could increase. In general, VRM classes that restrict surface-disturbing activities would indirectly help maintain forage levels by reducing activities from other resource programs that could eliminate forage, harass livestock, and increase the potential for noxious and invasive or invasive weeds.

Acres of VRM Class I and II in areas open and closed to livestock grazing are shown in Table 4.57, VRM and Grazing Management by Alternative, below. The types of impacts from these allocations are the same as described above.

**Table 4.57. VRM and Grazing Management by Alternative**

	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alt
<b>VRM Class I Areas Available for Grazing (Allotted and Unallotted; Includes Active Movement)</b>	69,118	92,184	71,118	107,269	82,811
<b>VRM Class I Areas Closed to Grazing (Allotted and Unallotted)</b>	0	1,283	557	361	0

	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alt
<b>VRM Class II Areas Available for Grazing (Allotted and Unallotted; Includes Active Movement)</b>	33,990	96,204	137,937	102,344	123,886
<b>VRM Class II Areas Closed to Grazing (Allotted and Unallotted)</b>	0	20,305	361	0	3,845
<i>Source: BLM 2012i</i>					

### ***Impacts from Management of Recreation***

Recreational activities can affect livestock grazing through direct human disturbance, and indirectly throughout rangeland degradation. Many of the conflicts surrounding the use of rangelands revolve around the impacts of urban development and related public land use (Holechek 2001; Brunson and Steel 1994). Disturbance can include unwanted dispersion of animals due to gates left open by recreational users; displacement, harassment, or injury of animals; or damage to range improvements from recreational vehicles or recreational target shooting (Morgan, Newman, and Wallace 2007). Recreational use may also result in removal of forage resources and increase dust on forage in high use areas, leading to lower forage palatability for livestock. Additional indirect effects of recreation are the possible introduction of weed species and reduced forage availability. SRMAs would increase or decrease these impacts, dependent on the type of recreation emphasized in these areas and the degree to which they replaced unmanaged recreation currently occurring throughout the planning area.

Under Alternative A, livestock would continue to be impacted by recreation, as use is likely to increase in the long term. The BLM would manage recreation in this alternative commensurate with livestock grazing operations throughout the D-E NCA, and due to the large number of routes open for public use, the potential for conflict between users and livestock would increase over time.

Under Alternative B, tighter limitations on recreational activities (i.e., SRP events, target shooting), would limit activities that could be disruptive to livestock management. Much of the D-E NCA would be designated as an ERMA, where recreation is managed in concert with other resource objectives, and impacts on grazing in this area would be reduced relative to those under SRMA management, as described below. Throughout the D-E NCA, recreation would be restricted as needed to reduce conflicts between recreation and livestock in order to achieve livestock objectives; as a result, impacts from recreation would be minimized under this alternative.

Under Alternative C, SRMA management could result in changes in grazing management such as relocation of livestock or other limitations on grazing activities that could be required to reduce conflicts with recreation, resulting in increased time or cost of management for permittees. The impacts would be even more pronounced under Alternative D, which proposes the most acres of SRMAs.

Under Alternatives C, D, and the Proposed Plan Alternative, the Cactus Park SRMA would be managed, in part, for a greater appreciation of the historical interaction of human activities, including the importance of the ranching community to the area. This may result in fewer restrictions on livestock grazing in the SRMA.

Under Alternatives C and D, limitations on livestock management would be somewhat offset by requirements to identify locations for recreation that do not create pervasive conflict with livestock grazing.

Under the Proposed Plan Alternative, SRMA management would result in impacts similar to those under Alternatives C and D. However, SRMAs would be monitored for biological objectives, which could help maintain forage for livestock. In addition, conflicts with grazing would be resolved on a case-by-case basis. As a result, impacts from recreation would be reduced under this alternative.

### ***Impacts from Management of Scientific Use and Educational Use***

In general, Alternatives B, C, D, and the Proposed Plan Alternative would provide additional opportunities for scientific inquiry and educating visitors about livestock grazing practices, which would lead to a greater public and scientific understanding and improved livestock management.

### ***Impacts from Management of Livestock Grazing***

Grazing management is impacted by direct and indirect changes to acres available for livestock grazing, AUMs of forage allotted for livestock use, and restrictions that may impact managing options for permittees.

Wildlife species compete with livestock for forage, water, and cover when they occupy the same area. Uneven distribution of big game may result in some grazing allotments receiving a disproportionate use of forage by wildlife and may necessitate change in livestock management. Allocating all additional forage achieved through vegetation manipulation or installation of improvements to wildlife reduces the incentive for permittees to participate in the program. Actions to improve wildlife habitat may improve forage conditions in the long term and indirectly maintain or increase the forage base for livestock and wildlife.

Impacts from closures and restrictions for special status species and bighorn sheep are further discussed under Impacts from Management of Special Status Species and Natural Communities and Non-Special Status Fish and Wildlife. Impacts from limitations to active movement for protection of riparian areas only are discussed under Impacts from Management of Priority Species and Vegetation and Noxious and Invasive Weeds. Impacts of restrictions on water improvements in the DE Wilderness Area are discussed under Impacts from Management of Wilderness.

Under Alternative A, 204,921 acres are available for grazing, including 8,141 acres open to active movement only (see Table 4.56, Overview of Livestock Grazing Impacts by Alternative). A total of 14,403 AUMs are available. Escalante Canyon allotments may be closed if adverse impacts on special status species were detected; lack of other direct closures would provide maximum management options for permittees.

Allocating any additional forage to livestock and wildlife would allow for a potential increase in AUMs. Across a limited area, timing limitations would prohibit construction of range improvements in deer, elk and bighorn sheep habitat from December to May and for elk calving from May to June, resulting in seasonal limitations on permittees. Re-issuance of vacant and relinquished allotments for grazing would also provide potential additional forage for livestock use.

Construction of new structural range improvements would be allowed on a case-by-case basis, providing management options for permittees.

Under Alternative B, 188,389 acres (approximately 8-percent reduction from Alternative A) would be available for grazing. This includes 12,756 acres open to active movement only (see Table 4.56, Overview of Livestock Grazing Impacts by Alternative). A total of 10,034 AUMs would be available (approximately 30 percent reduction from Alternative A). Closures to grazing under this alternative for protection of other resources would be increased to 21,589 acres; as a result, permittees would need to relocate livestock to other BLM allotments or would have to locate alternative forage. This would mean impacts on time and costs for management and potential impacts on the ability to maintain viable operations, depending on acres and AUMs affected.

Alternative B would have the greatest emphasis on wildlife protection, and correspondingly, the highest potential for impacts on livestock grazing. Under Alternative B, any increases in forage could not be allocated to livestock; therefore, increases in AUMs would not be likely unless allotment acres were expanded. Timing limitations would effectively cover most allotments in the D-E NCA, which affects the time that permittees have to manage livestock and to construct and maintain range improvements. Closures of vacated or relinquished allotments and closures of unallotted areas, except where active movement was previously permitted, would further limit management options for permittees.

Limited construction of new structural range improvements would be permitted when degradation to other resources could occur; this would limit management options for permittees and impact their ability to effectively distribute livestock.

Under Alternative C, 209,059 acres (approximately 2 percent change from alternative A) would be available for grazing. This includes 12,097 acres open to active movement only (see Table 4.56, Overview of Livestock Grazing Impacts by Alternative). A total of 14,185 AUMs would be available (approximately 1.5 percent reduction from Alternative A). Also under Alternative C, closures would be limited to 918 acres on the Bean Allotment and Rose Creek. Closure of the Bean Allotment would reduce conflicts with adjoining private lands and may have impacts on allotment permittees. Closures of Rose Creek would have little functional impact, as rugged terrain prevents use of the allotment. Use of vacated or relinquished allotments as grass banks may provide forage for permittees in times of drought or wildfire. Availability to use active movement in unallotted areas may provide some options for movement of cattle between allotments.

Alternative C would provide some flexibility to allocate increases in forage availability to livestock, consistent with biological objectives. Timing limitations would be the same as described under B although some exceptions and modifications may be granted in Alternative C. Alternative C, D, and the Proposed Plan Alternative allow for some new fencing in pronghorn range with requirements that construction allows for antelope passage.

Construction of new structural range improvements would be permitted under Alternatives C, D, and the Proposed Plan Alternative when needed to achieve biological resource objectives, thus providing some opportunities for permittees and ability to distribute livestock effectively.

Under Alternative D, 209,617 acres (2 percent decrease from Alternative A) would be available for grazing. This includes 6,275 acres open to active movement only (see Table 4.56, Overview of Livestock Grazing Impacts by Alternative). A total of 14,416 AUMs would be available (less than 1 percent change from Alternative A). Closures would be limited to the Bean Allotment and Rose Creek, with impacts as described under Alternative C. Combining vacant or relinquished allotments with active allotments and classifying unallotted areas as open to grazing would provide additional forage for permittees compared to alternatives B and C. Under Alternative

D, increases in forage available could be allocated to livestock under the same conditions and resulting in the same impacts as described under Alternative C.

Under the Proposed Plan Alternative, 206,127 acres ( less than 2 percent increase from Alternative A) would be available for grazing. This includes 11,932 acres open to active movement only (see Table 4.56, Overview of Livestock Grazing Impacts by Alternative). A total of 14,349 AUMs would be available (less than 1 percent change from Alternative A). Closures would be limited to Bean Allotment, with impacts as described under Alternative C.

The evaluation of vacated or relinquished allotments as grass banks, combined with active allotments or closures, would provide management flexibility. It also may allow for additional forage for permittees if in keeping with biological resource objectives. Managing unallocated areas according to specific open/closed/active movement designations would provide some level of managing flexibility, while minimizing conflicts with other resource objectives. Administrative division of two allotments that span the D-E NCA and UFO under the Proposed Plan Alternative would allow for more efficient management across different levels of bighorn sheep risk of association. However, it may increase administrative and compliance tasks for permittees, potentially increasing the management time and costs of these two allotments.

Under the Proposed Plan Alternative, forage allocation for livestock (i.e., AUMs) could be either increased or decreased in order to make progress toward achieving biological objectives. This provides the most flexibility in grazing management to meet objectives for biological resources but could also impact grazing where forage allocations are reduced.

Under the Proposed Plan Alternative, forage allocation for livestock (i.e., AUMs) could be either increased or decreased in order to make progress toward achieving biological objectives. This provides the most flexibility in grazing management to meet objectives for biological resources but could also impact grazing where forage allocations are reduced. Impacts from applying timing limitations would also be similar to those for Alternative C.

### ***Impacts from Management of Transportation and Travel***

Depending on the amount of designated routes and their type and amount of use, transportation and travel management could result in short-term rangeland degradation, forage loss, and temporary livestock displacement, particularly from routes open to public use in areas open to grazing. Long-term impacts of route-based travel use include reduced availability of forage, reduced palatability because of dust on vegetation and disturbance and harassment of livestock. Conversely, when travel is closed or limited to designated trails within areas open to livestock grazing, but administrative access is allowed, permittees may benefit from reduced disturbance of livestock.

Alternatives A and the Proposed Plan Alternative provide the greatest potential for conflict due to the greatest number of miles of routes open to public use (716 and 551 miles, respectively), which could result in damage to grazing improvements such as fences, cattle guards, and watering facilities. By contrast, limiting public use to 244 miles under Alternative C would result in the least potential for conflict. All alternatives provide administrative use of roads closed to the public on a case-by-case basis, potentially allowing access for livestock permittees. However, access may be limited, and impacts on flexibility of management for permittees could still occur. In addition, seasonal closures could have an impact on permittees' ability to maintain range improvements or conduct livestock management activities.

***Impacts from Management of Land Tenure and Land Use Authorizations***

Short-term impacts from lands and realty actions, such as construction of power lines, pipelines, or other structures within ROWs, include temporary forage removal, livestock displacement, and an increased potential for noxious and invasive weed introduction and proliferation. Long-term impacts include changes in forage and reduced forage palatability because of dust on vegetation, and livestock disturbance and harassment from increased levels of human activities. Acquisition of private lands within allotments can improve access for permittees and management options for livestock movement, or provide additional resources such as water sources.

Under all alternatives, access to private inholdings would be maintained, limiting access conflicts for permittees. In addition, acquisition or exchanges of land would be managed in accordance with NCA principals and impacts on grazing allotments are likely to be minimal. Impacts from utility development are possible where areas available for grazing converge with areas available to ROW development, as described above. Under Alternatives A and D, portions of the planning area open to grazing (11,483 acres and 15,920 acres, respectively) are classified as ROW avoidance areas, where limiting ROW development to existing corridors would reduce impacts. Under all other alternatives, the D-E NCA would be managed, either in entirety or the vast majority, as a ROW exclusion area, with even greater limitations and fewer impacts on grazing with particular exceptions. As such, impacts on grazing would be minimal. Under the Proposed Plan Alternative, one exception classifies a buffer alongside Highways 50 and 141 (approximately 1,022 acres) as a ROW avoidance area; however the corridors are near the highways and are unlikely to have an impact on livestock or forage availability.

***Impacts from Management of Areas of Critical Environmental Concern***

Grazing availability depends on the relevance and importance criteria for which the ACEC was designated; however, some level of grazing is usually compatible with ACEC management. Limitations can vary from total exclusion of grazing, to limits on the class of livestock animal, to time constraints on when livestock are allowed to graze an area. Fencing may be required to exclude portions of the allotments. If the sites are developed for visitor access the movement of people to the sites within the grazing areas may accelerate the introduction of weeds. In general, restrictions on surface-disturbing and other disruptive activities would likely reduce harassment of grazing animals and maintain and improve vegetation conditions, thereby maintaining or improving the forage base for livestock. If livestock management options, such as livestock improvements, are limited in these areas, or if livestock are excluded entirely, improved forage conditions would not benefit permittees and the long term impact would be an increase in cost and time for management.

Under all alternatives, all or some ACECs would be open to grazing; limitations would vary by alternative (see Table 4.58, Acres of ACECs and Livestock Grazing Management by Alternative).

**Table 4.58. Acres of ACECs and Livestock Grazing Management by Alternative**

	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alt
ACECs Available for Grazing	1,359 (59%)	0	7,605 (59%)	29,053 (98%)	8,876 (99%)
ACECs Closed to Grazing	0	0	0	0	0

Source: BLM 2012i

Under Alternative A, Escalante Canyon ACEC would allow grazing at current levels unless studies find damage to special status species, therefore impacts on grazing in this ACEC would be minimal.

Under Alternative B, there would be no ACECs and therefore no impacts as described above.

Under Alternative C, no ACECs or portions of ACECs would be completely closed to grazing. Livestock grazing and active movement in the River Rims ACEC and Escalante ACECs would be managed to protect unique and sensitive resources therefore, resulting in limitations on location and timing of grazing with potential for increased time and cost for permittees.

Under Alternative D, livestock active movement in Escalante Canyon and livestock grazing and active movement in the Gunnison River ACEC would be managed to protect unique and sensitive resources. This would limit the location and timing of grazing, with the potential for increased time and cost for permittees.

Under the Proposed Plan Alternative, livestock grazing may be limited in location and timing, particularly in Escalante Canyon, which is managed to protect Colorado hookless cactus, a priority species. Riparian areas in the Escalante Canyon ACEC would be limited to active movement only. The types of impacts would be the same as described for other alternatives.

### ***Impacts from Management of Wild and Scenic Rivers***

When portions of open grazing allotments overlay river segments eligible or suitable for inclusion in the NWSRS, livestock permittees may be required to change livestock management, including timing and duration of grazing or maintaining and constructing range improvements to protect ORVs, free-flowing condition, and tentative classification. The type of impact would be the same across all alternatives, although the potential for modification of grazing practices would vary by alternative depending upon how many segments are eligible or suitable (refer to Chapter 2, Wild and Scenic Rivers).

Under Alternative A, continuing to manage 10 streams and segments as eligible for WSR designation could result in impacts on permittees along any of these segments. Under Alternative B, impacts would be most likely in areas available for grazing and overlapping with the 9,027 acres in Gunnison River segments 1 and 3 and Cottonwood Creek. Both are managed as suitable for inclusion in the WSR system. Under Alternative C, impacts would be as described for Alternative A. Under Alternative D, no impacts would occur on livestock management due to the release of all segments from consideration. Under the Proposed Plan Alternative, impacts could occur in areas available for grazing within the Cottonwood Creek WSR suitable segment (approximately 3,728 acres).

### ***Impacts from Management of Wilderness Study Areas***

Grazing in WSAs is determined by the active AUMs permitted at the time of designation for any allotment that is wholly or partly within the WSA. Maintenance of existing facilities and construction of new facilities necessary to manage and utilize permitted AUMs would be conducted in accordance with BLM Manual 6330. Livestock grazing managed in accordance with BLM regulations does not impact naturalness in the WSA. WSA limitations on surface-disturbing activities and the presence of motorized vehicles can benefit livestock management within the area if management options for livestock grazing are preserved and other disturbances reduced.

Across all alternatives, WSA management would have impacts on livestock grazing as described above. The only differences between alternatives relate to management if the WSA is released by Congress. For example, under Alternatives A, C, and D, the WSA lands (2,885 acres) would not be managed for wilderness characteristics, and there would be no additional limitations on grazing. Under Alternatives B and the Proposed Plan Alternative, the WSA would be managed for wilderness characteristics and impacts would be minimal, as described above.

## **Summary of Impacts from Alternatives**

In summary, under Alternative A, impacts would generally occur on a case-by-case basis and limitations would apply where land is found to not meet the BLM's standards for public land health. Site-specific conflicts with protection of water, soils, and vegetation, as well as recreation management, would be possible. Adjustments to management of livestock grazing would be made on the basis of resource condition or conflicts and monitoring results. This alternative would result in few adverse impacts on the livestock grazing program.

Adverse impacts on costs to permittees would be the greatest under Alternative B due to the most restrictive limitations on grazing locations, utilization levels, season of use, and type of livestock allowed. Under this alternative, areas closed to all livestock grazing would be increased due to restrictions to meet cultural and biological resource objectives. Of particular note are closures for allotments within the sensitive salt desert shrub plant community, in Rose Creek and Upper Escalante Creek, or for protection of riparian habitat. In addition, under Alternative B, no domestic sheep grazing would be allowed and impacts on those permittees would be the highest under this alternative. Furthermore, any additional forage created by management actions in this alternative could not be allocated to livestock.

Under Alternative C, Livestock grazing would be intensively managed to help achieve "very good" condition as defined for priority species and vegetation. AUMs could be reduced, or other limitations applied, which would increase time and cost to permittees if vegetation treatments or intensive management are insufficient to achieve biological resource objectives. Of note are limitations to Colorado hookless cactus habitat and priority vegetation habitat under Alternative C that could result in adverse impacts on livestock grazing. Some closures would occur, limiting grazing in biologically sensitive areas, including Rose Creek. Domestic sheep grazing would be prohibited in allotments where conflicts with bighorn sheep are highly likely to occur, resulting in adverse impacts for those permittees.

Under Alternative D, the most land would be open to livestock grazing in this alternative and fewer restrictions would generally apply. AUMs could be reduced or limitations put into place to achieve biological and recreation resource objectives, resulting in increased costs or time for permittees, but at a lower level than under the other action alternatives. Impacts from recreation would continue to be possible from SRMA management, which covers the largest acreage under this alternative, although measures to reduce conflict would still be in place as discussed for Alternative C, above. This Alternative would result in the fewest adverse impacts on livestock grazing of the four action alternatives.

The Proposed Plan Alternative would implement a moderate amount of restrictions on grazing when compared to other alternatives. AUMs could be reduced if intensive management or vegetation treatments are insufficient to achieve biological resource objectives. Timing of use could be adjusted to help meet recreation objectives. These limitations on livestock grazing would result in adverse impacts on permittees. For permittees grazing sheep, mitigation measures



would be adopted to reduce the risk of disease transmission between domestic sheep and goats and desert bighorn sheep, with some adverse impacts on permittees, but less than that seen in Alternatives B or C.

## Cumulative Impacts

The CIAA used to analyze cumulative impacts on livestock grazing includes located entirely or partially within the planning area. Past actions that have affected livestock grazing include human-caused surface disturbances (mineral development, recreation, prescribed burning, mechanical vegetation treatments, WSAs and historic grazing practices) and **wildfires** that have contributed to current ecological conditions.

Present actions affecting livestock grazing are mainly those that reduce available grazing acreage, restrict management actions or the level of forage production in those areas. Key examples include **wildfires**, land disposals, motorized vehicle use, recreation, habitat restoration, fuel reduction and special designations that restrict grazing.

Future actions affecting livestock grazing would be similar to present actions, including any restrictions associated with species listings under the ESA and proposed management of Colorado hookless cactus and Gunnison sage-grouse. The presence and potential expansion of bighorn sheep populations, and management to protect bighorn sheep from disease, could affect the ability of current domestic sheep permittees to utilize the D-E NCA, or convert from cattle use to domestic sheep use on specific allotments. If permitted to graze domestic sheep within the D-E NCA, permittees would be required to adhere to restrictions that would minimize the potential for bighorn sheep and domestic sheep association. Similarly, along WSR study segments and in SRMAs, livestock grazing practices may be modified if practices or facilities are impairing ORVs along WSR segments or are preventing outcomes from being experienced in SRMAs.

The cumulative impacts under each alternative would parallel the impacts of the alternatives in the general impact analysis, above. In general, management actions in every alternative would result in short or long-term availability of forage due to treatment activities, other surface-disturbing and disruptive activities, human disturbance, and the presence of grazing wildlife, threatened or endangered species, and special designations. Forage would decrease over the long term as current vegetation treatments revert back to a shrub/tree component and the use of future treatments is more limited.

Cumulative projects that increase human disturbance in grazing areas could also indirectly impact grazing by increasing weeds and invasive species. As stated above, weed invasion can reduce preferred livestock and wildlife forage and increase the chance of weeds being dispersed by roaming cattle. Cumulative projects that increase human disturbance in grazing areas could also directly impact grazing by displacing, injuring, or killing animals.

Cumulative impacts from each resource or resource use would be greater on livestock grazing if the cumulative projects were to occur simultaneously. However, standard mitigation identified in the Colorado's Standards for Public Land Health would be implemented across all alternatives and any other cumulative projects on BLM-administered lands, thereby reducing or minimizing cumulative impacts on decision area lands.

### 4.4.5. Transportation and Travel Management

Travel designations support resource programs and are designed to help achieve their objectives. Consequently, the travel designations would adhere to the management prescriptions for all other resources and uses included under each alternative, while following theme of that alternative. As a supportive function, transportation and travel management is not impacted by other resources and resource uses. Instead, transportation and travel management decisions impact other resources and resource uses. These impacts are discussed in those particular resource sections of this chapter. The existing conditions for travel and transportation management are described in section 3.3.5, Transportation and Travel Management.

### 4.4.6. Land Tenure and Land Use Authorizations

This section discusses impacts on land tenure and land use authorizations from proposed management actions of other resources and resource uses. Existing conditions are described in section 3.3.6, Land Tenure and Land Use Authorizations.

## Methods of Analysis

### *Indicators*

Indicators of impacts on land tenure and land use authorizations include the following:

- Ability to accommodate the demand for utility authorizations, based on the number and total size of ROW corridors;
- Ability to accommodate preferred routes for ROW corridors, based on the acres and location of ROW exclusion areas;
- Ability to accommodate preferred routes or locations for all ROWs, including, but not limited to, access routes, pipelines, communication sites, transmission and distribution lines, based on acres of ROW exclusion areas and available locations
- Ability to process land tenure adjustments necessary to meet resource needs, based on the acres and location of lands.

Indicators of adverse impacts on Land Tenure and Land Use Authorizations would result from actions that limit the ability to accommodate land use authorizations or land tenure adjustments. Indicators of beneficial impacts on Land Tenure and Land Use Authorizations would result from actions that enhance the ability to accommodate land use authorizations or land tenure adjustments.

The mandate to manage land for multiple uses requires the BLM to consider the potential impacts of management actions on land tenure and land use authorizations, including ROWs. Because land tenure adjustments and land use authorizations are a resource use rather than an environmental component, impacts on land tenure and land use authorizations are a direct result of actions from other resource programs and resource uses. The discussion of the effects on land tenure and land use authorizations under each alternative is limited to the effects on existing and future authorized uses and land tenure, including mitigation measures, restrictions, costs,

and issuance or denial of proposals. Management actions of other resources were assessed to determine restrictions or limitations to land use authorizations (including ROWs) and land tenure.

### ***Assumptions***

The analysis includes the following assumptions:

- Existing ROWs and communication sites would be managed to protect valid existing rights;
- Upon renewal, assignment, or amendment of existing ROWs, additional mitigation or modification stipulations may be included if the requested actions meet the objectives of the RMP;
- ROW holders may continue their authorized use as long as they are in compliance with the terms and conditions of their grant;
- The BLM would continue to process land tenure adjustments as funding and workloads allow;
- The demand for communication facilities and ROWs would increase over the life of this RMP;
- Maintenance and upgrading of existing utilities and other ROWs is preferred before the construction of new facilities in the decision area;
- Demand for access and small distribution facilities to extend and upgrade services, such as utilities, may increase as rural development occurs on the dispersed private parcels within the D-E NCA;
- Retention areas would include all decision area lands (the BLM-administered lands within the planning area), with the exception of parcels included in potential land exchanges;
- Per the Omnibus Act, the BLM will manage, subject to valid existing rights, all decision area public lands, and all land and interests in land acquired by the United States within the Conservation Area as withdrawn from all forms of entry, appropriation, or disposal under the public land laws; location, entry, and patent under the mining laws; and operation of the mineral leasing, mineral materials, and geothermal leasing laws; and
- Withdrawals would be reviewed, as needed, and recommended for extension, modification, revocation, or termination. All existing withdrawals initiated by other agencies, such as the BOR, would be continued unless the initiating agency requests that the withdrawal be revoked.

Implementing management for the following resources or resource uses would have negligible or no impact on land tenure and land use authorizations and are therefore not discussed in detail: air quality, geological and paleontological resources, priority species and vegetation, special status species, fish and wildlife, noxious and invasive weeds, soils and water quality, cultural resources, wilderness, lands with wilderness characteristics, fire and fuels, science, education, recreation, livestock grazing, NHTs and backcountry byways, WSAs, and watchable wildlife areas.

## **Direct and Indirect Impacts**

### ***Impacts from Management of Scenic Values***

Managing for scenic values can restrict the placement of ROWs on the basis of the VRM classification of the area. Managing areas as VRM Class I, where landscapes are managed to

preserve the existing character of the landscape, would **limit but not preclude** the location of utility lines, pipelines, and communication sites within the area. Managing lands as VRM Class II, where landscapes are managed to maintain their existing character, would **limit** the location of most ROWs unless they are adequately sited or otherwise mitigated to meet the objectives for VRM Class II. Managing landscapes as VRM Class III would allow for landscape modifications that are noticeable by the casual observer but do not dominate the view. This would allow for the placement of utility lines, pipelines, and communication sites in a manner consistent with VRM class objectives. Additionally, proposed amendments such as modifications or improvements to existing ROWs facilities in these areas could be subject to additional requirements to meet objectives for visual resources. As a result, special design features may need to be identified and selected to protect visual resources. These additional siting and mitigation requirements could result in increased ROW processing time and project costs.

Under Alternative A, **69,238** acres of the D-E NCA would be designated as VRM Class I, **36,769** acres as VRM Class II, and **104,871** acres as VRM Class III (Map 2–12a). This would result in restrictions on land use authorizations to comply with the objectives for the respective management class. Opportunities for land use authorizations in areas managed as VRM Class I would be severely limited, while some limited opportunities for land use authorizations would be available in VRM Class II areas. Areas designated as VRM Class III would provide the greatest opportunities for land use authorizations, particularly those that would be noticeable within the landscape.

Under Alternative B, **93,468** acres of the D-E NCA would be designated as VRM Class I and **116,519** acres as VRM Class II, which would result in restrictions on land use authorizations to comply with the objectives for the respective management class. As there would be nearly 25,000 additional acres of Class I areas in this alternative compared with Alternative A, the magnitude of impacts on land use authorizations would be greater as Class I would be severely limiting. As there are no Class III allocated areas, there would be no opportunity for a land use authorization that would have a noticeable appearance within the landscape.

Under Alternative C, **71,679** acres of the D-E NCA would be designated as VRM Class I and **138,308** acres as VRM Class II. Impacts would be similar to those described for Alternative A for VRM Class I, although there would be more areas with limited opportunities for land use authorizations in the expanded Class II areas. Also, as there are no Class III allocated areas, there would be no opportunity for a land use authorization that would have a noticeable appearance within the landscape.

Under Alternative D, **107,636** acres of the D-E NCA would be designated as VRM Class I and **102,351** acres as VRM Class II. The types of impacts caused by these designations would be similar to those described under Alternative A; opportunities for land use authorizations in areas managed as VRM Class I would be severely limited, while some limited opportunities for land use authorizations would be available in VRM Class II areas. As there are an additional 35,000 acres of Class I areas in Alternative D (relative to Alternative A), this alternative would be the most restrictive and limiting for land use authorizations. Also, as there are no Class III allocated areas, there would be no opportunity for a land use authorization that would have a noticeable appearance within the landscape.

Under the Proposed Plan Alternative, **82,830** acres of the D-E NCA would be designated as VRM Class 1 and **127,169** acres as VRM Class II. These designations would have similar types of impacts as those described under Alternative A. Opportunities for land use authorizations

would be severely limited in areas designated as VRM Class 1, while some limited opportunities would exist in VRM Class II areas. As this alternative has 13,593 more acres designated as VRM Class I and 22,298 more acres designated as VRM Class II than does Alternative A, it would be more restrictive and limiting for land use authorizations. Also, as there are no Class III allocated areas, there would be no opportunity for a land use authorization that would have a noticeable appearance within the landscape.

### ***Impacts from Management of Transportation and Travel***

Closing existing routes to public motorized and mechanized use and designating them for administrative use only would limit access to private property and existing land use authorizations, which would also limit vandalism of and trespass on property. Maintenance of existing land use authorizations would be affected due to access restrictions.

Alternative A does not contain guidance regarding the designation of routes that lead to ROWs and private property. In some cases, routes used for accessing private property and existing utilities are designated for public use, which could lead to vandalism of private property and ROWs.

Under Alternatives B, C, D, and the Proposed Plan Alternative, the BLM would close routes to the public that dead-end at ROWs or private properties. These routes would be limited to administrative use or closed entirely. Such management would limit public access and opportunities for trespass on and vandalism of private property and ROWs. Route closures may limit access to maintain facilities under existing authorizations.

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

Impacts on land tenure and land use authorizations would result from actions that change the acres available for land use authorizations in the form of ROW exclusion or avoidance areas or that would impact land tenure objectives. Land acquisitions would be managed on a case-by-case basis in order to meet resource objectives if the acquisition would contribute to achieving the goals and objectives for the D-E NCA purposes. This would result in additional, more contiguous public lands within the D-E NCA and could protect sensitive resources and accommodate resource management. Lands or interests in acquired lands would be managed in a manner consistent with adjacent or comparable public lands in the D-E NCA, which would improve management efficiency and consistency.

Under all alternatives, the BLM could acquire non-Federal inholdings and incorporate those lands into the D-E NCA. Acquisitions would be dependent upon having a willing seller and the lands' contribution to meeting the individual resource goals and objectives.

Under all action alternatives the 400 acres of the West-wide Energy Corridor that falls within the D-E NCA would be removed and would no longer be available for use. Future energy corridor proposals would have to be located outside of the D-E NCA in the public lands northeast of highway 50, affecting costs and feasibility of projects.

Under Alternative A, proposals for new communication developments would be managed on a case-by-case basis. Alternative A would manage two corridors for public utilities and other facilities. In the northern half of the D-E NCA, the use of existing corridors or upgrading of existing facilities would be encouraged. This could restrict placement, delay availability of energy supply (by restricting pipelines and transmission lines), create communication dead zones, or delay communications service availability. Such requirements could also require ROWs to be

installed in areas with more restrictions on accessibility or construction. Placing facilities within existing corridors could limit effective location of facilities within the corridor. This is because multiple facilities would be placed within corridor boundaries. Multiple placements of pipelines, transmission lines, and other infrastructure may be restricted as ROW facilities would compete for space or may not be compatible with one another, affecting project feasibility.

Under Alternative A, approximately 91,327 acres would be managed as unsuitable for public utilities, prohibiting the placement of ROWs in these areas, thereby reducing options for ROW placement in the D-E NCA. The remainder of BLM-administered lands would be available for ROW development (including access, distribution, transmission lines, pipelines, and communication sites), which would accommodate desired placement of facilities, accommodate access and efficient energy supply, and minimize additional costs. Co-location of facilities within existing corridors would reduce impacts on resources in other planning area locations, clarify the preferred locations for facilities, simplify construction and maintenance of the facilities, and simplify planning for new facilities. Alternative A would manage the Ninemile Hill communications site in accordance with the approved communications site plan.

Under Alternative B, the entire NCA (210,012 acres) would be managed as a ROW exclusion area (except for reasonable access and utilities to private property and existing facilities, upgrades or modifications to existing facilities, and one new communication facility). No ROW corridors would be managed under this alternative. The current energy corridor within Unaweep Canyon would be eliminated from the D-E NCA, forcing this corridor outside of the D-E NCA. These proposed management actions would eliminate the opportunity for new public utilities or land use authorizations in the D-E NCA, including those for research and monitoring purposes that would further the understanding and management of the purposes of the D-E NCA.

All ROWs on roads would be maintained according to their current classification, and no upgrades in classification would be allowed. New roads would be constructed to minimal widths. Road restrictions would limit traffic and access into areas.

Proposed ROWs with new towers would have restrictions, such as no night lighting or new towers over 100 feet, and structures will be required to be self-supporting. These restrictions would ensure that visual intrusions to the D-E NCA landscape settings would be limited and the integrity of scenic values would be maintained; however, tower restrictions would restrict communication coverage in areas. Alternative B would continue to manage the Ninemile Hill communications site subject to no new towers being constructed. Communication coverage would be limited or restricted in this area.

Under Alternative C, almost all of the NCA (209,086) would be managed as a ROW exclusion area, except that one ROW corridor would be managed (926 acres) and would include the allowances discussed under Alternative B relating to research and monitoring. Alternative C would generally eliminate the opportunity for new public utilities or land use authorizations in the D-E NCA, as described under Alternative B, except within the ROW corridor. However, land use authorizations could be permitted to further the understanding and management of the purposes of the D-E NCA, which would benefit the D-E NCA.

The ROW corridor and communication site would be available for development (including telephone/fiber optic and power lines within the corridor and a communication site at a new locality), which would accommodate desired placement of facilities, accommodate access and efficient utility supply, and minimize additional costs.

Under Alternative C, proposed ROWs with new towers would have the same use restrictions as Alternative B. Impacts would also be the same as Alternative B. Alternative C would allow one new communication site within a ROW exclusion area in the Delta or Montrose County portion of the D-E NCA. It would be subject to minimizing impacts on visual, natural, and cultural resources. Allowing a communication site ROW would improve communications coverage in the area.

Alternative C would manage the Ninemile Hill communications site subject to limitations identified elsewhere in the RMP. Communication coverage would be limited or restricted in this area based on the number of use restrictions applied.

Under Alternative C impacts from road maintenance and construction would be the same as Alternative B.

Under Alternative D, 90,290 acres would be managed as ROW exclusion areas and would include the allowances discussed under Alternative C. This would eliminate the opportunity for new public utilities or land use authorizations within these areas. Alternative D would also manage approximately 118,784 acres as ROW avoidance areas and an additional 926 acres as a designated utility corridor. Avoidance area management would allow new land use authorizations subject to special stipulations to protect resources. This would accommodate desired placement of facilities, access, and efficient energy supply while protecting resources in the D-E NCA. Impacts from permitting a new communication site, management of the Ninemile Hill communication site, and management of the utility corridor would be the same as under Alternative C. Alternative D impacts from road maintenance and construction would be the same as Alternative B.

Under Alternative D, proposed ROWs with new towers would have the same use restrictions as under Alternative B. Impacts would also be the same as under Alternative B. Alternative D would allow for location of one new communications site within the ROW exclusion area of the Delta or Montrose County portion of the D-E NCA. Impacts would be the same as described under Alternative C.

Under the Proposed Plan Alternative, nearly all of the NCA would be managed as a ROW exclusion area except for a 1,022-acre ROW avoidance area along Highways 50 and 141. Impacts would be similar to those under Alternative B except for the inclusion of the ROW avoidance areas. This buffer along Highways 50 and 141 would further expand the possibility for accommodating desired placement of facilities, accommodate access and efficient energy supply, and further minimize additional costs.

Under the Proposed Plan Alternative, proposed ROWs with new towers would have use restrictions similar to those under Alternative B. The Proposed Plan Alternative would also include requirements that new towers repeat basic elements of form, line, color, and texture found predominant in natural features of adjacent landscapes. Impacts would also be similar to those described in Alternative B; however, tower restrictions relating to the visual setting may affect the feasibility to construct new towers and may further limit communications in the area. The Proposed Plan Alternative would manage the Ninemile Hill communications site in accordance with the current plan for the site. Impacts would be the same as under Alternative C.

Under the Proposed Plan Alternative, one new communications site would be allowed in the Delta or Montrose County ROW exclusion area of the D-E NCA. However, the new site would be allowed only if a new location were necessary and were to lead to equivalent or better protection of visual, natural, and cultural resources. Communication coverage would not occur should the proposed communication site ROW not meet conditions for approval.

The Proposed Plan Alternative would manage roads similarly to Alternative B, but new roads would be constructed to minimize impacts on natural and cultural resources. Public use and access would be more restricted than under other alternatives.

### ***Impacts from Management of Areas of Critical Environmental Concern***

Designating ACECs to protect relevant and important values would limit opportunities for land exchanges in these areas. ACEC designation could impact modifications to and upgrades to existing ROWs. New ACEC designations would limit ROWs within any proposed avoidance areas, further restricting public utilities.

Under Alternative A, 1,895 acres in Escalante Canyon would continue to be managed as an ACEC that is closed to development of major utilities. ROWs and public utilities would not be permitted in this area.

No ACECs would be designated under Alternative B; therefore there would be no restrictions on ROWs resulting from ACEC management.

Under Alternative C, the existing Escalante Canyon ACEC would be expanded slightly from Alternative A and the BLM would also designate the River Rims ACEC. ROWs and proposed public utilities would not be permitted in these areas.

Under Alternative D, the existing Escalante Canyon ACEC would be expanded and the BLM would also designate the Gunnison River ACEC. ROWs proposed within the Escalante Canyon and Gunnison River ACECs would not be allowed.

Under the Proposed Plan Alternative, the existing Escalante Canyon and Gunnison Gravels ACECs would be expanded and the BLM would also designate the Gibbler Mountain and River Rims ACECs. Impacts would be similar to those under Alternative D but over a smaller area.

### ***Impacts from Management of Wild and Scenic Rivers***

Opportunities for land acquisition within the study corridor of segments determined eligible or suitable for inclusion in the NWSRS would likely be more of a priority if acquisition would improve the BLM's ability to maintain the free-flowing condition or preliminary tentative classification or protect the identified ORVs of the segments. Study segments with fragmented land patterns are the Gunnison River and Escalante Creek.

As public lands are withdrawn from disposal, under all alternatives, management of WSRs would have no impacts on land tenure adjustments relating to disposal or exchange. In accordance with the Omnibus Public Land Management Act of 2009 (Subtitle E, Dominguez-Escalante National Conservation Area) this is not allowed.

Under Alternative A both the Gunnison River and Escalante Creek would be managed as eligible for inclusion in the NWSRS. Non-BLM administered lands in the study corridors would likely be priorities for acquisition from willing sellers if such acquisition would improve the BLM's ability to maintain the free-flowing condition or preliminary tentative classification or protect the identified ORVs of the segments. Where eligible segments overlap ROW avoidance areas, ROWs could be permitted if they do not impact the free-flowing condition, preliminary tentative classification, or identified ORVs. ROWs would not likely be permitted in segment corridors with a preliminary tentative classification of wild. Restricting ROWs would limit the potential for new utility projects within avoidance areas.



Management of WSRs under Alternatives B and C would have no additional impacts relating to ROWs. This is because ROWs are precluded based on proposed ROW exclusion areas, which apply to the entire NCA.

Under Alternative B the Gunnison River segments would be managed as suitable for inclusion in the NWSRS. Non-BLM administered lands in the study corridor would likely be a priority for acquisition; impacts would be similar to those identified under Alternative A but over a smaller area.

Under Alternative C both the Gunnison River and Escalante Creek would be managed as eligible for inclusion in the NWSRS. Non-BLM administered lands in the study corridor would likely be a priority for acquisition; impacts would be the same as those identified under Alternative A.

Because all eligible WSR segments would be determined not suitable and released from further study under Alternative D, there would be no impacts on ROWs from management of eligible or suitable WSR segments. Additionally, land acquisition would not likely be a priority in these areas.

Under the Proposed Plan Alternative, only Cottonwood Creek would be managed as suitable for inclusion in the NWSRS. The segment would have a wild tentative classification and so ROWs would not be permitted. Both the Gunnison River and Escalante Creek would be found not suitable and released from further WSR study. Land acquisition would not likely be a priority in these areas.

## Summary of Impacts from Alternatives

Overall, Alternative A would provide the most opportunities for the BLM to authorize land uses, and thus the most beneficial impacts on the Land Tenure and Land Use Authorizations program. Alternative A would manage the fewest acres as unsuitable for public utilities, providing the most opportunities for location of ROWs, access, and facilities. In addition, the fewest number of acres are managed as VRM Class I. This is the VRM designation that would limit opportunities for land use authorizations and is also the only alternative with VRM Class III designations. This would provide the greatest opportunities for land use authorizations subject to VRM class objectives. On the other hand, management of the Gunnison River and Escalante Creek as eligible for inclusion in the NWSRS limits the BLM's ability to exchange land. Managing the Escalante Canyon ACEC has similar adverse impacts. Finally, the most miles of routes would be available for public use under this alternative, which increases opportunities for adverse impacts from trespass of and vandalism to private property, including existing facilities, as well as increases the risk of safety hazards.

Alternative B would be the most restrictive on land use authorizations, providing the most adverse impacts in the form of ROW exclusion, and with the fewest exceptions (see Chapter 2). Fewer miles of routes would be designated for public use than under Alternative A, although similarly to under Alternatives D and the Proposed Plan Alternative, decreasing opportunities for adverse impacts from trespass and vandalism.

Under Alternative C, the entire NCA would be managed as a ROW exclusion area, with some exceptions (see Chapter 2). This would have similar adverse impacts as those described for Alternative B. The BLM would also manage one designated utility corridor, which would allow for regional utility connection. This alternative would also manage the fewest acres as VRM Class I of any of the action alternatives, so would likely result in similar accommodations for

new facilities as Alternative D. Alternative C would close the most miles of routes to public use but would designate the most miles of routes for administrative use, ensuring access to private property and reducing the possibility for adverse impacts from trespass, vandalism, and access to safety hazards.

Alternative D would be the least restrictive and fewest adverse impacts for new land use authorizations of the action alternatives. More than half of the D-E NCA would be managed as ROW avoidance area. However, this alternative would also manage the most acres as VRM Class I and where ROW avoidance areas overlap VRM Class I, opportunities for land use authorizations would contain restrictions to protect scenic values. Impacts from travel management would be similar to those under Alternative B and the Proposed Plan Alternative.

Overall, impacts on land use authorization under the Proposed Plan Alternative would be similar to those for Alternative C, although more acres would be managed as VRM Class I and a slightly larger area of Escalante Canyon would be designated as an ACEC. Impacts from travel management would be similar to those for Alternatives B and D.

## Cumulative Impacts

Cumulative impacts on lands and realty occur through changes in the designation and development of land resources and in changes to access of the land. Since the D-E NCA is largely closed to new ROWs, future utility development would be shifted to other nearby lands, including private, State, and other BLM-administered lands; therefore, future utility development needs would be focused on adjacent lands and could increase costs if routes are diverted around the D-E NCA boundary.

## 4.5. Special Designations

This section is a description of the special designation areas in the D-E NCA planning area and follows the order of topics addressed in Chapter 3:

- Areas of Critical Environmental Concern
- National Trails
- Wild and Scenic Rivers
- Wilderness Study Areas
- Watchable Wildlife Areas

### 4.5.1. Areas of Critical Environmental Concern

This section discusses impacts on ACECs from proposed management actions of other resources and resource uses. Existing conditions concerning ACECs are described in section 3.4.1, Areas of Critical Environmental Concern.

Interdisciplinary team meetings were held to discuss ACEC nominations and the effectiveness of current ACECs. The conclusions from those meetings were used in this analysis and are described in Appendix M, Evaluation of Proposed and Existing Areas of Critical Environmental Concern.

## **Methods of Analysis**

### ***Indicators***

Indicators of adverse impacts on ACECs include the following:

- Degradation of relevant and important values for which the area was proposed or designated.

Indicators of beneficial impacts on ACECs include the following:

- Protection or enhancement of relevant and important values for which the area was proposed or designated.

The relevant and important values and number of acres that would be designated for each potential ACEC are summarized in Table 4.59, Summary of Areas of Critical Environmental Concern.

### ***Assumptions***

The analysis includes the following assumption:

- Permitted activities would not be allowed to degrade the relevant and important values for which the ACECs are designated.

As such, the following discussion focuses on analyzing impacts on relevant and important values in potential ACECs or portions of ACECs that would not be proposed for designation.

Management actions for the following resources would have negligible or no impact on ACECs and are therefore not discussed in further detail: air resources, science, education, national trails, and watchable wildlife areas.

## **Direct and Indirect Impacts**

Impacts identified for ACECs are limited to the footprint of the ACECs proposed under each alternative and are based on the effect management actions would have on the relevant and important values of the potential ACEC. The relevant and important values for each potential ACEC are identified in Appendix M, Evaluation of Proposed and Existing Areas of Critical Environmental Concern. Adverse impacts on ACECs would be considered significant if management actions fail to prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.

**Table 4.59. Summary of Areas of Critical Environmental Concern**

Potential ACEC	Relevant and Important Values	Acres Designated as an ACEC Under Each Alternative				
		A	B	C	D	Proposed Plan Alternative
<b>Gunnison Gravels</b>	Sensitive geological resources	5*			15	15
<b>Escalante Canyon</b>	Special status plants, unique plant associations, recreational hazard, fish and wildlife, geological and cultural resources	1,895		2,281	11,202	2,281
<b>Gibbler Mountain</b>	Paleontological resources, rare plants				1,310	1,310
<b>Gunnison River</b>	Special status plants and wildlife, cultural and paleontological resources				17,316	
<b>River Rims</b>	Special status plants, paleontological resources			4,916		5,405
<b>Big Dominguez Canyon</b>	Special status plants, unique vegetative communities, cultural resources			5,627		
<i>Note: White-highlighted or grey-highlighted text indicates changes from the Draft RMP. Cells with grey fill indicate that the area would not be designated as an ACEC.</i>						
<i>*This acreage was not adequately calculated in the 1987 Grand Junction RMP (BLM 1987). The update to 15 acres under Alternative D and the Proposed Plan Alternative is a correction, not an expansion.</i>						

Management actions that restrict surface-disturbing activities through PSD, SSR, or TL surface use restrictions in the potential ACEC footprint would provide some amount of protection and beneficial impacts for a number of relevant and important values including cultural, vegetation, fish, wildlife, paleontological, and geological resources.

Restrictions on surface-disturbing activities would be implemented to protect several resources. Table 4.60, Acres of Potential ACECs Overlapping with Surface Use Restrictions by Alternative, below, shows the acres of potential ACECs not proposed for designation that would receive protection from restriction on surface-disturbing activities. In addition to the TLs shown below, the entire D-E NCA would be subject to a TL between May 15 and July 31 to protect migratory birds, although TLs to protect other species also fall within that time frame.

As can be seen in Table 4.60, Alternative B would protect the greatest percentage of undesignated ACECs with a PSD restriction, followed by Alternatives C, E and D, respectively.

**Table 4.60. Acres of Potential ACECs Overlapping with Surface Use Restrictions by Alternative**

Restriction	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alt
<b>Acres of Undesignated ACECs:</b>	34,013	36,312	23,489	6,649	28,143
<b>Subject to PSD Restriction</b>	--	24,985 (69%)	11,743 (50%)	2,248 (34%)	10,583 (38%)
<b>Subject to SSR Restriction</b>	--	3,895 (11%)	9,861 (42%)	2,901 (44%)	15,630 (56%)
<i>Source: BLM 2012i</i>					

### ***Impacts from Management of Geological and Paleontological Resources***

Under alternatives where ACECs would be designated for their relevant and important geological or paleontological values, those values would receive direct protection and are not discussed further (refer to Table 4.59, Summary of Areas of Critical Environmental Concern). Where there are restrictions on surface-disturbing activities to protect paleontological values or outstanding geologic features, all relevant and important values would receive incidental protection. Aside from restrictions on surface-disturbing activities, impacts from geology and paleontology management would be limited to those potential ACECs with relevant and important geological or paleontological values.

Under Alternative A, 33,338 acres of potential ACECs with relevant and important geological or paleontological values are not designated as ACECs (Gibbler Mountain, Gunnison River, River Rims, and a portion of Escalante Canyon). The BLM would manage to reduce impacts on outstanding geological features on a case-by-case basis, which would offer variable protection to the undesignated portions of the Escalante Canyon ACEC, which contain outstanding geologic features. paleontological clearances/surveys and mitigation would be required prior to surface-disturbing activities in PFYC Class 4 and 5 areas, which include portions of the Gibbler Mountain, Gunnison River, Dominguez Canyon, Escalante Canyon, and River Rims potential ACECs. Wherever they overlapped with PFYC Class 4 and 5 areas, paleontological values within these areas would be protected from impacts of surface-disturbing activities, such as destruction or removal of fossils. Collection of paleontological resources would be limited to scientific or Native American traditional uses, which would increase protection for paleontological resources in the ACECs by ensuring these resources are not removed or destroyed during excavation.

Under Alternative B, 35,248 acres of potential ACECs with relevant and important geological or paleontological values would not be designated as ACECs (Gunnison Gravels, Escalante Canyon, Gibbler Mountain, Gunnison River, and River Rims). Impacts from requiring paleontological clearances/surveys and mitigation prior to surface-disturbing activities in PFYC Class 4 and 5 areas would be the same as Alternative A. In addition, the BLM would conduct geologic mapping to identify outstanding geologic features within Escalante Canyon and other areas with the potential for damage to occur. Identification of such features within ACECs could increase protection of their relevant and important values in comparison with Alternative A. Alternative B would prioritize monitoring of known surficial localities of scientifically important fossils to protect those resources from vandalism and theft. Because the Gibbler Mountain, Gunnison River, and River Rims ACECs contain formations with high paleontological values, including fossils, monitoring of these localities would increase protection of the relevant important values of these ACECs in comparison with Alternative A.

Under Alternative C, 28,051 acres of potential ACECs with relevant and important geological or paleontological values would not be designated as ACECs (Gunnison Gravels, a portion of Escalante Canyon, Gibbler Mountain, Gunnison River, and a portion of River Rims). Impacts under Alternative C would be similar to those under Alternative A, except that Alternative C would require paleontological clearances/surveys and mitigation prior to surface-disturbing activities in PFYC Class 3, 4, and 5 areas. The Gibbler Mountain and the Gunnison River potential ACECs would be more protected from accidental damage to fossils from surface-disturbing activities in comparison with Alternative A. Any other potential ACECs containing PFYC Class 3 areas would also be more protected since those areas would also be surveyed for paleontological resources.

Under Alternative D, 489 acres of the River Rims potential ACEC with relevant and important geological or paleontological values would not be designated as an ACEC. Impacts from requiring paleontological clearances/surveys and mitigation prior to surface-disturbing activities would be the same as those under Alternative A. Monitoring of known surficial localities of scientifically important fossils to prevent vandalism and theft would increase protection of those fossils in the River Rims potential ACEC beyond that in Alternative A. While collection of vertebrate and trace fossils would be limited to scientific purposes, recreational collection of common invertebrate and plant fossils would be allowed. This would provide less protection for these fossils than Alternative A and could result in removal of the fossils or damage to them during excavation but the impact would be limited to a smaller area.

Under the Proposed Plan Alternative, 26,237 acres of potential ACECs with relevant and important geological or paleontological values would not be designated as ACECs (a portion of Escalante Canyon and Gunnison River). Geology management under the Proposed Plan Alternative would be similar to that under Alternative C but over a smaller area. Paleontological clearances/surveys and mitigation would not be required in PFYC Class 3 areas unless those areas were likely to contain high potential for scientifically significant fossils.

***Impacts from Management of Priority Species and Vegetation, Special Status Species and Natural Communities, Non-Special Status Fish and Wildlife, and Soils and Water Quality***

Protections for priority vegetation would complement protections within potential ACECs and would prevent degradation of the biological ACEC values. Properly functioning riparian/wetland vegetation communities provide soil stabilization, soil filtration, and habitat for fish and wildlife species. In turn, properly functioning riparian/wetland vegetation communities can provide protection for relevant and important vegetation, fish, and wildlife values. Similarly, increasing land health of priority vegetation communities that either comprise the relevant and important vegetation value or support the relevant and important wildlife value would benefit these resources.

Where restrictions on surface-disturbing activities to protect priority vegetation, special status species, fish and wildlife, or soils and water quality overlap potential ACECs, the relevant and important values would be indirectly protected. Refer to Table 4.60, Acres of Potential ACECs Overlapping with Surface Disturbance Restrictions by Alternative, for differences between alternatives.

Alternative A would continue management that focuses on case-by-case protections and flexible management such as BMPs, a strategy that could lead to degradation of vegetation and habitat-related values.

Under Alternative B, the emphasis on natural processes and restricting resource uses (e.g., livestock grazing, route construction, camping) would benefit relevant and important fish, wildlife, and vegetation values. However, the hands-off approach would also limit the BLM's ability to respond to degradation of relevant and important values, should it occur.

Alternative C would incorporate flexible management with restrictions instead of prohibitions on livestock grazing and new routes. Surface-disturbing activities within sensitive areas would still be prohibited, and proactive vegetation management would be used.

Alternative D and the Proposed Plan Alternative would allow active and passive management techniques to meet priority vegetation objectives. By allowing the use of more management

techniques to achieve the desired level of landscape health, the BLM can respond to and influence changing conditions on a shorter time scale.

### ***Impacts from Management of Noxious and Invasive Weeds***

Weed treatments in the short term may impact relevant and important values by damaging habitat. However, in the long-term, weed treatment and eradication would benefit relevant and important values as land health improves. Impacts would be similar under all alternatives.

### ***Impacts from Management of Fire and Fuels***

Unplanned fire ignitions could cause short- or long-term damage to vegetation, which could damage habitat for wildlife, cause soil erosion, and impact water quality as well as riparian vegetation depending on the extent and severity of the fire. In the short term, fire and fuel treatments remove vegetation and cause bare areas to be more susceptible to soil loss or weed invasion. In the long term, wildland and prescribed fires and fuel treatments reduce dense vegetation, create vegetation mosaics, and promote vertical stratification, improve herbaceous understory, and return nutrients to the soil. Often, fire and fuel treatments result in improved vegetation diversity and ecosystem function and lower the risk for an uncharacteristically large or severe wildfire. Emergency stabilization and rehabilitation efforts can help stabilize soils and reestablish desirable plant communities. This could impact segments with biological relevant and important values (i.e., Escalante Canyon, Gibbler Mountain, Gunnison River, River Rims, and Big Dominguez Canyon).

Under Alternative B, only minimal amounts of fire and fuel manipulation would be permitted and there would be no vegetation treatments for the purposes of improving the FRCC or to meet biological and cultural resource objectives. In the short-term relevant and important values may be protected from alteration due to both natural and prescribed fire. Over the long-term, however, the lack of vegetation treatments could lead to conditions that are outside the natural range of variability and could increase the risk of high intensity wildfires.

Under Alternatives D and the Proposed Plan Alternative, a suite of tools to manage fire and fuel would be implemented. While some relevant and important values may be diminished in the short-term, it is likely that biological relevant and important values would benefit over the long-term from planned and unplanned fire, fuel treatments, and post-fire rehabilitation.

### ***Impacts from Management of Cultural Resources***

Under alternatives where potential ACECs with relevant and important cultural values would be designated as ACECs, those values would receive direct protection and are not discussed further (refer to Table 4.59, Summary of Areas of Critical Environmental Concern). Where there are restrictions on surface-disturbing activities to protect cultural resources, all relevant and important values would receive incidental protection. These acreages are reflected in Table 4.60, Acres of Potential ACECs Overlapping with Surface Disturbance Restrictions by Alternative. Aside from restrictions on surface-disturbing activities, impacts from cultural resources management would be limited to those potential ACECs with relevant and important cultural values (i.e., Escalante Canyon, Gunnison River, and Big Dominguez Canyon).

Under Alternative A, the BLM would protect and preserve high value sites as prescribed by law and policy or as opportunities and situations arise and would manage potentially eligible properties as eligible until evaluative testing can occur. These management actions would

protect potential cultural resources sites from removal or damage until the sites can be evaluated. Response to basic Section 106 and 110 responsibilities in addition to identification of cultural properties requiring protection measures and implementation of such measures would also protect cultural resources from damage or removal. Authorized actions would include stipulations requiring applicants to protect cultural resources from damage.

Under Alternative B, the same cultural resource protections as under Alternative A would apply. Additionally, properties eligible for cultural resource management would be preserved to protect the integrity of setting and sense of place and their scientific or traditional values, increasing protection of these resources in their original setting in comparison with Alternative A. Educational programs about cultural resource ethics could increase the public's knowledge of how to preserve these resources over Alternative A. Development of a monitoring plan identifying sites to receive regular patrols could also reduce theft and vandalism of cultural resources in comparison with Alternative A. Prohibition of surface-disturbing activities near sites would reduce the risk of accidental destruction of cultural resources during such activities in comparison with Alternative A. Management of the Big Dominguez Canyon Heritage Area would increase protection of cultural resources from destruction or disturbance for portions of the Dominguez Canyon and Gunnison River ACECs that overlap the Heritage Area. Specifically, making the Wilderness within the Heritage Area day use only would reduce vandalism and theft of such resources within overlapping portions of the Big Dominguez Canyon ACEC. Management of the Leonard's Basin Heritage Area would have the same effect for the portion of the Gunnison River ACEC that overlaps the Heritage Area. Specifically, limiting access to rock art sites to traditional and administrative purposes, restricting recreation or livestock grazing use to prevent degradation of desired natural landscapes and cultural sites, and making the Wilderness portion of the Heritage Area day use only would protect cultural ACEC values from theft, accidental damage, and vandalism.

Management under Alternative C would be the same as under Alternative B, except it would involve proactive stabilization and protection of sites that are becoming degraded and would limit archaeological excavation in certain areas to preserve some cultural resources for future technologies or concerns. These actions would improve protection and preservation of cultural resources in comparison with Alternative A.

Under Alternative D, the only potential ACEC with relevant and important cultural values not designated as an ACEC would be Big Dominguez Canyon. Management under Alternative D would be similar to that under Alternative A except that management actions would also preserve the existing character of eligible cultural properties through holistic management to protect the cultural, visual, and biological landscape. Monitoring plans and SSR restrictions would have the same impacts as under Alternative B, increasing protections for cultural resources from vandalism, theft, and damage over Alternative A. Management of the Big Dominguez Canyon Heritage Area would educate the public on natural resources and special status species within that area, reducing the potential for theft, vandalism, and accidental damage to these resources within the Big Dominguez Canyon potential ACEC.

Under the Proposed Plan Alternative, 20,832 acres of potential ACECs with relevant and important cultural values would not be designated as ACECs (a portion of Escalante Canyon, Big Dominguez Canyon, and Gunnison River). Cultural resources management under the Proposed Plan Alternative would be the same as that under Alternative D, with the same impacts. Cultural resources within ACECs would be more effectively protected than under Alternative A.



### ***Impacts from Management of Wilderness***

Under all alternatives, the Dominguez Canyon Wilderness would be managed in accordance with the Wilderness Act. Protection of the wilderness characteristic of naturalness would protect biological relevant and important values and protection of the undeveloped nature would protect all values. In addition, the instream flow water right held by the CWCB to protect wilderness values would protect the unique and sensitive rare plants and vegetation communities where they occur along Big Dominguez Creek and Rose Creek in the Big Dominguez Canyon potential ACEC. Where potential ACECs overlap the Wilderness (12,917 total acres of portions of the Escalante Canyon, Gunnison River, and Big Dominguez Canyon), relevant and important values would be protected.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Management actions that lead to the protection of lands with wilderness characteristics could benefit ACECs by providing indirect protections for relevant and important values. Under Alternatives A, C, and D, no management actions would address lands with wilderness characteristics and no complementary protections would occur.

Under Alternative B, a portion of the Gunnison River and River Rims potential ACECs, which would not be designated under this alternative, would overlap with a portion of the Gunnison Slopes lands with wilderness characteristics unit, which would be managed to protect those characteristics. Allowing natural processes to degrade existing human developments (except existing and necessary livestock developments) and dictate the condition of biological resources unless conditions would substantially deteriorate in the absence of management action could protect biological and cultural ACEC values from disturbance and damage. Prohibitions on surface-disturbing activities and new developments could also protect these values from disturbance and damage during construction. Limitation of visitor use as necessary to prevent substantial degradation to naturalness and opportunities for solitude could reduce risks of disturbance and damage to biological, cultural, and paleontological resources from recreation visitors.

Under the Proposed Plan Alternative, the BLM would manage 13,597 acres for protection of wilderness characteristics. However, there is no overlap between these areas and potential ACECs, and thus no complementary protections.

### ***Impacts from Management of Scenic Values***

None of the potential ACECs have an identified relevant and important scenic value. However, managing according to higher VRM class objectives (i.e., VRM Class I and II) would generally restrict large-scale developments that would be noticeable to the casual observer. These types of developments have the potential to cause habitat loss or fragmentation, soil erosion, and damage or destruction of cultural and paleontological resources. As such, managing according to higher VRM class objectives would provide incidental protection to all relevant and important values.

Under Alternative A, 24,631 acres with relevant and important values but not designated as ACECs are managed as VRM Class I or II, providing incidental protection to these acres. However, 9,666 acres with relevant and important values but not designated as ACECs are managed as VRM Class III, which allows modifications to the landscape that are noticeable by the casual observer. This alternative provides the least amount of incidental protection from the management of scenic values.

Under Alternatives B, C, D, and the Proposed Plan Alternative, all lands within the D-E NCA would be managed as either VRM Class I or Class II. This would increase protective impacts on ACECs in comparison with Alternative A, because more acres would be protected from disturbance by large-scale developments.

### ***Impacts from Management of Recreation***

Under Alternative A, allowance of geocaching, metal detecting, paintball activities, glass containers, and recreational target shooting could degrade ACEC values through damage to desired plant communities and special status plant species, weed spread, and damage to cultural, geological, or paleontological resources.

Activity restrictions at The Potholes, Escalante put-in, and Dominguez campground could **limit** these recreational impacts in the Escalante Canyon and Big Dominguez Canyon potential ACECs. Requiring portable toilet systems and fire pans along the Gunnison River for overnight camping could protect water quality, and the fish species dependent on it, in the Gunnison River ACEC.

Management under Alternative B would prohibit geocaching, metal detecting, paintball, glass containers, and recreational target shooting throughout the D-E NCA (note that restrictions on recreational target shooting do not apply to hunting). This could reduce the impacts of recreation described under Alternative A. A prohibition on issuance of competitive SRPs that authorize motorized racing events and camping closures when camping contributes to degradation of natural resource objectives could also reduce flattening of vegetation, disturbance of wildlife, and damage to cultural resources in comparison with Alternative A. Requiring portable toilet systems and fire pans for all overnight camping in undeveloped sites outside the Dominguez Canyon Wilderness could reduce litter and water quality degradation in comparison with Alternative A, providing some protection to the relevant and important values in the Big Dominguez Canyon potential ACEC.

Under Alternative B, the Gunnison River and River Rims potential ACECs overlap the Hunting Ground ERMA. The ERMA would be designated to offer motorized and non-motorized trail-based activities and dispersed camping. All of these could increase the concentration of recreation in the area and thus increase the risk of damage to the relevant and important values.

Management of the Gunnison River Corridor as an ERMA under Alternative B, which would overlap the Gunnison River potential ACEC, would not likely impact the riparian values found closest to the water as the ERMA would be managed for river-related recreation. Camping would be limited to designated campsites so impacts on the riparian resources from dispersed camping would be reduced. Limitations on visitor use, including group size, could reduce the disturbance or disruption of wildlife that use the river.

Management of the Cactus Park ERMA under Alternative B could impact the Gunnison Gravels and Gibbler Mountain potential ACECs by offering trail-based motorized and non-motorized recreation opportunities. Although the Gunnison Gravels ACEC is currently fenced, increasing recreation use in the area could increase the risk of vandalism at the sites.

Management of Escalante Canyon ERMA under Alternative B, which overlaps the Escalante Canyon potential ACEC, would not likely impact the relevant and important values as the ERMA would generally be managed for low-impact types of recreation such as hiking, climbing, kayaking, auto touring (sightseeing), and picnicking.

Management under Alternative C would apply the same restrictions as under Alternative B on SRPs for motorized racing events and on metal detecting and paintball activities. Recreational target shooting closures would cover 50 percent of the D-E NCA including portions of Big Dominguez Canyon and Escalante Canyon ACECs. As described under Alternative B, degradation impacts from recreation on ACECs would be reduced in comparison with Alternative A. Restricting camping to designated sites when necessary to meet natural resource objectives could reduce vegetation flattening, disturbance of wildlife, and damage to cultural resources in comparison with Alternative A. Prohibition of glass containers within Escalante Canyon and the Gunnison River RMA would reduce litter and hazards to wildlife on overlapping undesignated portions of the Escalante Canyon and Gunnison River ACECs. Requiring portable toilet systems and fire pans for all overnight camping in the Gunnison River and Cactus Park RMAs would reduce litter and degradation of water quality in comparison with Alternative A on the Gibbler Mountain potential ACEC and on overlapping portions of the Gunnison River ACEC.

Under Alternative C, a small portion of the Gunnison River corridor would be managed as an SRMA for float-boating activities. Impacts would be similar to those for Alternative B.

Designation of Cactus Park as an SRMA would concentrate recreation in the area overlapping the Gunnison Gravels and Gibbler Mountain potential ACECs. The SRMA designation could also increase construction disturbance associated with recreational facilities. The combination of increased visitation and increased disturbance would increase the risk of damage to the relevant and important values. However, part of the objectives for the SRMA include an improved understanding of the resources in the D-E NCA and experiencing recreation in a way that protects biological and cultural resources. This would potentially lead to a sense of stewardship and reduce impacts on the relevant and important values. Furthermore, while recreation would be concentrated in the area, the BLM would be able to better monitor and mitigate impacts

Under Alternative D, impacts of geocaching, metal detecting, and paintball activities along with glass use would be the same as those under Alternative A. Recreational target shooting closures would cover 75 percent of the D-E NCA and 85 percent of all potential ACECs across the D-E NCA (30,735 acres). Limitations on overnight camping would be the same as under Alternative C, reducing impacts in comparison with Alternative A as described above. Allowing issuance of competitive SRPs that authorize motorized racing events could increase impacts of recreation on ACEC values in comparison with Alternative A by attracting more concentrated visitor activity. Requiring portable toilet systems and fire pans for all overnight camping in The Hunting Ground, Gunnison River, Cactus Park, Sawmill Mesa, and Escalante Canyon RMAs could reduce litter and better protect water quality on ACECs in comparison with Alternative A.

Under Alternative D, the Hunting Ground would be designated as an SRMA and would overlap a portion of the River Rims potential ACEC not designated under this alternative. This could concentrate recreation and disturbance associated with facility construction in the area and disturb the plant and paleontological values. However, the SRMA would generally be managed for low-impact recreational activities in a generally undeveloped setting, so impacts are unlikely.

General recreation management under the Proposed Plan Alternative would be similar to under Alternative D, with one fewer RMA. As described under that alternative, recreation impacts would be reduced in comparison with Alternative A. For example, management of the Hunting Ground, and Ninemile Hill ERMA would be similar to that under Alternative D, where those areas would be managed as SRMAs. Management of the Gunnison River, Cactus Park and Escalante Canyon SRMAs would be similar to that under Alternative D. Under the Proposed Plan

Alternative, recreational target shooting closures would cover approximately 5 percent of the D-E NCA and 3 percent of all potential ACECs across the D-E NCA (2,484 acres)

### ***Impacts from Management of Livestock Grazing***

If managed improperly, livestock grazing throughout the D-E NCA and livestock active movement (see Glossary) in riparian/wetland vegetation could damage the biological relevant and important values through, trampling, weed spread, soil erosion caused by heavy use, and overgrazing. Because livestock grazing would be managed consistent with the priority vegetation objectives, adjustments to grazing management would be implemented in cases where biological objectives are not being met due to grazing activities. These adjustments could include changes in stocking rate, the timing of grazing, and additional terms and conditions, and could mitigate impacts from livestock grazing to biological relevant and important values.

Table 4.61, Livestock Allocations in Undesignated ACECs, shows the number of acres of undesignated ACECs open to livestock active movement only and closed to livestock grazing, by alternative.

**Table 4.61. Livestock Allocations in Undesignated ACECs**

	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alt
<b>Acres of Undesignated ACECs:</b>	34,013*	36,312*	23,489*	6,649*	28,143
<b>Acres Closed to Livestock Grazing</b>	0	11,028 (30%)	0	0	2,608 (9%)
<b>Acres Open to Active Movement Only</b>	3,798 (11%)	3,778 (10%)	4,662 (20%)	3,184 (48%)	4,494 (16%)
*Acres for Draft alternatives updated to account for acreages consistently between these and the Proposed Plan Alternative; acres include the maximum extent of undesignated ACECs.					
Source: BLM 2012i					

Under Alternative A, livestock grazing would be allowed on 26,721 acres of ACECs not designated under this alternative, potentially impacting relevant and important biological values as previously discussed. On 3,798 acres of Escalante Canyon and Big Dominguez Canyon not designated as ACECs, active movement would be the only permitted form of livestock use. This would limit the duration of grazing and trampling and aid in the maintenance of healthy riparian/wetland vegetation communities, which in turn provide healthy habitat for aquatic wildlife.

Domestic goat and sheep grazing would continue under Alternative A. Where it overlaps the Escalante Canyon and Gunnison River potential ACECs, desert bighorn sheep, part of the wildlife value of these potential ACECs, are at risk of disease transmission from domestic goats and sheep. This alternative provides the greatest risk.

In order to protect riparian habitat under Alternative B, livestock use would be closed on 11,028 acres in portions of Escalante Canyon, Gunnison River, and upper Big Dominguez Canyon potential ACECs. This acreage includes those areas that are currently unallotted under Alternative A, providing absolute protection to the vegetation values in portions of those potential ACECs that would be closed. In addition, on 3,774 acres of the Big Dominguez Canyon potential ACEC, livestock use would be limited to active movement only, which would protect the vegetation values along the creek as described for Alternative A. On the remaining 21,890 acres of potential

ACECs that would not be designated under this alternative, livestock grazing would be permitted. Impacts would be the same as under Alternative A but over a smaller area.

Domestic goat and sheep grazing would be discontinued under Alternative B. Where current domestic goat or sheep grazing overlaps the Escalante Canyon and Gunnison River potential ACECs, the discontinuation of this type of livestock grazing would protect the bighorn sheep, part of the wildlife value of those potential ACECs, from disease transmission.

Under Alternative C, livestock grazing would be allowed on 19,626 acres of ACECs not designated under this alternative, potentially impacting relevant and important biological values as previously discussed. On 4,662 acres livestock use would be limited to **active movement** only, which would protect the vegetation values along the creek as described for Alternative A.

Domestic goat grazing would be excluded in high probability of interaction areas under Alternative C and domestic sheep grazing would be considered on an allotment-by-allotment basis in accordance with Appendix C. Where domestic sheep grazing would continue to occur within Escalante Canyon and the Gunnison River potential ACECs, desert bighorn sheep, part of the wildlife value of these potential ACECs, would be at risk of disease transmission from domestic sheep.

Under Alternative D, livestock grazing would be allowed on 4,264 acres of ACECs not designated under this alternative, potentially impacting relevant and important biological values as previously discussed. On 3,184 acres in Big Dominguez Canyon, livestock use would be limited to **active movement** only, which would protect the vegetation values along the creek as described for Alternative A.

Alternative D provides the second-greatest risk to desert bighorn sheep as domestic sheep grazing could still occur in desert bighorn sheep habitat. Stipulations on grazing permits would be added to reduce risks.

Under the Proposed Plan Alternative, livestock use would be closed on 2,608 acres of ACECs not designated under this alternative. This acreage includes some areas that are currently unallotted under Alternative A, providing absolute protection to the vegetation values in portions of those potential ACECs that would be closed. In addition, on 4,494 acres of portions of the Big Dominguez Canyon and Escalante Canyon potential ACECs, livestock use would be limited to **active movement** only, which would protect the vegetation values along the creeks as described for Alternative A. On the remaining 21,027 acres of potential ACECs that would not be designated under this alternative, livestock grazing would be permitted. Additionally, intensively managing grazing in the Gunnison River riparian zone to improve riparian vegetation would reduce trampling, habitat degradation, and weed spread in those areas in comparison with Alternative A. Impacts would be the same as under Alternative A but over a smaller area.

Under the Proposed Plan Alternative, impacts on desert bighorn sheep in Escalante Canyon and the Gunnison River potential ACECs would be similar to those for Alternative D, but additional restrictions would be required, further reducing the risk to desert bighorn sheep.

### ***Impacts from Management of Transportation and Travel***

Motorized and mechanized vehicle use could impact the relevant and important values of potential ACECs. Closing areas to motorized or mechanized travel would protect areas from impacts associated with such use, including vegetation trampling, disturbance of wildlife habitat,

soil erosion and runoff, noise, and the potential for the exacerbation of these impacts due to increased accessibility or use. Closure of areas or routes to motorized and mechanized use would indirectly protect all relevant and important values.

Designating routes for certain motorized and mechanized uses would help protect relevant and important values to a lesser degree. During route designation, the need for resource protection was taken into account when considering whether or not to keep routes open for certain uses or close them. Where routes remain open to motorized or mechanized use, the use of the routes could still impact relevant and important values. Table 4.62, Miles of Motorized and Non-motorized Routes Open and Closed within Potential ACECs, shows the miles of routes open and closed for public use in ACECs not proposed for designation.

**Table 4.62. Miles of Motorized and Non-motorized Routes Open and Closed within Potential ACECs**

Route Designation	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alternative
<b>Acres of Undesignated ACECs</b>	34,013*	36,312*	23,489*	6,649*	28,143
<b>Miles of Routes Closed for Public Use</b>	1	53	51	9	16
<b>Miles of Routes Open for Motorized Public Use</b>	62	17	4	2	19
<b>Miles of Routes Open for Non-motorized Public Use</b>	30	32	11	28	8
*Acres for Draft alternatives updated to account for acreages consistently between these and the Proposed Plan Alternative; acres include the maximum extent of undesignated ACECs.					
Source: BLM 2012i					

Under Alternative A, a total of 92 miles of routes would be available for motorized or non-motorized use in potential ACECs, the second-highest route density within undesignated ACECs of any of the alternatives (see Alternative D). Furthermore, just over two-thirds of the routes would be designated for motorized travel, which increases user access to these areas and increases the potential for impacts on resources in the area. Closures to public motorized and mechanized travel within the Dominguez Canyon Wilderness and Dominguez Canyon WSA could improve biological ACEC values by restoring natural vegetation communities and improving habitat connectivity in overlapping portions of the Escalante Canyon, Gunnison River, and Dominguez Canyon potential ACECs. Seasonal travel limitations would protect soils and big game winter concentration areas within the portion of the Escalante Canyon potential ACEC where it overlaps the seasonal closure area.

Under Alternative B, a total of 49 miles of routes would be available for motorized or non-motorized use in potential ACECs, the second-lowest route density within undesignated ACECs of any of the alternatives (see Alternative C). Furthermore, only about one-third of the routes would be available for motorized use, which could limit the accessibility of some of the areas and decrease risks to relevant and important values associated with travel. In addition to the closures to motorized and mechanized travel under Alternative A, the Gunnison Slopes unit of lands with wilderness characteristics would be closed to motorized and mechanized travel under Alternative B to protect naturalness, which would eliminate impacts from travel where the potential ACEC and lands with wilderness characteristics unit overlap. Seasonal travel limitations to protect big game winter concentration areas and saturated soils would have the

impacts described above, increasing protections in comparison with Alternative A in the Gibbler Mountain and Escalante Canyon potential ACECs where they overlap the seasonal closures.

Under Alternative C, a total of 15 miles of routes would be available for motorized or non-motorized use in potential ACECs, the lowest route density within undesignated ACECs of any of the alternatives. Furthermore, 75 percent of those routes would be for non-motorized use; impacts would be the same as those described for Alternative B but over a smaller area. Designation of Wilderness Zone 1 as limited to designated routes for foot and horse travel could reduce flattening and destruction of vegetation, habitat fragmentation, and disturbance of wildlife where the Gunnison River potential ACEC overlaps the Wilderness Zone 1. Seasonal closures to protect big game winter concentration areas and saturated soils in Gibbler Gulch could increase the protective impacts described under Alternative A for the Gibbler Mountain potential ACEC. Seasonal closures to protect saturated soils could cause the same improvement in soil health described above for overlapping undesignated portions of the Escalante Canyon ACEC.

Under Alternative D, a total of 30 miles of routes would be available for motorized or non-motorized use in potential ACECs, the highest route density within undesignated ACECs of any of the alternatives. However, 93 percent of the routes would be designated for non-motorized use, which could limit the accessibility of some of the areas and decrease risks to relevant and important values associated with travel. Most of the Big Dominguez Canyon potential ACEC would be closed to motorized and mechanized travel, except for the far western portion outside of the Dominguez Canyon Wilderness, so these routes are concentrated in the River Rims ACEC.

Under the Proposed Plan Alternative, a total of 27 miles of routes would be available for motorized or non-motorized use in potential ACECs, the second-lowest route density within undesignated ACECs of the alternatives. Approximately 30 percent of the routes would be designated for non-motorized use, which could limit the accessibility of some of the areas and decrease risks to relevant and important values associated with travel. Management under the Proposed Plan Alternative would be similar to that under Alternative D, except that designation of Wilderness Zone 1 as limited to designated routes for foot and horse travel would have the same impacts as under Alternative C.

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

Alternative A has the greatest impacts on potential ACECs as most potential ACECs outside of the Dominguez Canyon Wilderness and WSA are available for ROW location except for a portion of the Gunnison River potential ACEC where it overlaps the Gunnison River corridor managed as unsuitable for public utilities. If land use authorizations were permitted in the remaining potential ACECs, construction or modification activities could impact ACEC values through the flattening or removal of vegetation, desired plant communities, and special status plant species; habitat degradation and fragmentation; weed spread; degradation of scenic resources; and damage to cultural or geologic resources.

Under Alternatives B, C, and the Proposed Plan Alternative, all of the potential ACECs not proposed for designation would be managed as ROW exclusion areas, offering protection from surface-disturbing activities associated with land use authorizations.

Under Alternative D, 4,798 acres (64 percent) of potential ACECs not proposed for designation would be managed as ROW exclusion, offering protection from surface-disturbing activities associated with land use authorizations. The remaining 2,560 acres (36 percent) of potential ACECs not proposed for designation would be managed as ROW avoidance. If land use

authorizations were permitted in this area, construction or modification activities could impact ACEC values through the flattening or removal of vegetation, desired plant communities, and special status plant species; habitat degradation and fragmentation; weed spread; degradation of scenic resources; and damage to cultural or geologic resources.

### ***Impacts from Management of Areas of Critical Environmental Concern***

Where potential areas would be designated as ACECs, the BLM would protect the relevant and important values from degradation. Management of other designated areas overlapping designated ACECs would be modified to fit the objectives for the ACEC. For example, RMAs overlapping designated ACECs would have more stringent management in order to minimize disturbance. In some RMAs that overlap designated ACECs, camping would be prohibited or limited to designated sites. Where potential ACECs would not be designated, management of other resources could provide incidental protection to the relevant and important values, as discussed under impacts from other resources, which would still be present even if the potential ACEC were not designated.

Alternative D would provide the most direct protection to relevant and important values as the most acres would be designated as ACECs under this alternative, while Alternative B would provide the least direct protection as no ACECs would be designated. Alternative C and the Proposed Plan Alternative are similar in the acres of ACECs that would be designated, providing a similar amount of direct protection, while Alternative A has only slightly more acres designated as ACECs than Alternative B. See Table 4.59, Summary of Areas of Critical Environmental Concern, for the ACECs and corresponding acres designated or proposed for designation under each alternative.

### ***Impacts from Management of Wild and Scenic Rivers***

Managing segments as eligible (Alternative A) or suitable (Alternatives B, C, and the Proposed Plan Alternative) for inclusion in the NWSRS can provide protection for the relevant and important values of ACECs. Once a segment is found eligible or suitable, the BLM must protect the ORVs, free-flowing condition, and tentative classification of the segments. Where the ORVs are the same, there would be direct protection to the relevant and important values. Managing segments to protect the free-flowing condition would help protect riparian related values and fish and wildlife by offering adequate water supplies. Finally, managing for the tentative classifications of wild or scenic could prevent development that would disturb vegetation and wildlife or their habitat or damage cultural, paleontological, or geological values.

Under Alternative A, management of segments of the Gunnison River, Big Dominguez Creek, and Escalante Creek as eligible for inclusion in the NWSRS would protect ACEC values by prohibiting actions that either alter the free-flowing condition of stream segments or measurably diminish a stream segment's identified ORVs. The ORVs for these stream segments correspond with relevant and important ACEC values in the ACECs that they overlap. The Gunnison River segment has ORVs including special status fish species and cultural resources, which are also identified as relevant and important values within the Gunnison River ACEC. The Big Dominguez Creek segment has ORVs including the canyon tree frog and important cultural resources, both of which are identified as relevant and important values within the Big Dominguez Canyon ACEC. The Escalante Creek segment has ORVs including the unique geologic feature of the Escalante Potholes along with occurrences of peregrine falcons, hanging garden vegetation communities, and Eastwood's monkey-flower, all of which are identified as relevant and important values



within the Escalante Canyon ACEC. Because the ORVs on these segments would not be allowed to deteriorate, they would be protected as ACEC values as well.

Under Alternative B, 5,299 acres along segments of the Gunnison River would be determined suitable for inclusion in the NWSRS with a tentative Recreational classification. Impacts would be the same as Alternative A but would occur over a smaller area as the size of the Gunnison River WSR segment would be decreased. Stream segments on Big Dominguez Creek and Escalante Creek would be determined not suitable for inclusion in the NWSRS and would be released from interim protective management for WSR study segments, eliminating protective impacts on those ACECs in comparison with Alternative A.

Under Alternative C, all stream segments found eligible would be determined suitable for inclusion in the NWSRS. The same specific management actions for eligible and suitable stream segments would apply under Alternative C as would apply under Alternative B. Protective impacts on the Escalante Canyon, Gunnison River, and Dominguez Canyon potential ACECs would be the same as Alternative A. However, because a portion of Escalante Canyon and Big Dominguez Canyon ACECs would be designated under this alternative, the relevant and important values would not likely receive additional protection from the management of the overlapping WSR study segments.

Under Alternative D, all eligible stream segments would be determined not suitable for inclusion in the NWSRS and would be released from interim protective management for WSR study segments. This would eliminate protections for the Big Dominguez Canyon ACEC, which would not be designated under this alternative. There would be no impacts from the release of study segments on the Gunnison River and Escalante Canyon ACECs, because those ACECs would be designated under this alternative, and the relevant and important values would receive special management consideration.

Under the Proposed Plan Alternative, no eligible segments within potential ACECs would be determined suitable for inclusion in the NWSRS; there would be no protections to relevant and important values from WSR management.

### ***Impacts from Management of Wilderness Study Areas***

Under all alternatives, 480 acres of the Escalante Canyon and Dominguez Canyon potential ACECs overlap the Dominguez Canyon WSA and would receive incidental protection from WSA management. Managing the WSA to maintain their eligibility for consideration for wilderness would protect the relevant and important values by requiring new activities within the WSA meet the non-impairment criteria, which require that new facilities or uses must be temporary and not create new surface disturbance (BLM 2012e). In addition, the WSA is closed to ROW location. These actions would protect ACEC values within overlapping portions of potential ACECs by prohibiting new surface-disturbing activities and the subsequent impacts of those activities.

## **Summary of Impacts from Alternatives**

Outdated ACEC management under Alternative A would provide limited protection from adverse impacts for the relevant and important values within ACECs. In potential ACECs containing rare plants (all ACECs except the Gunnison Gravels ACEC), some limitations on livestock grazing to active movement only would provide additional beneficial impacts.

Under Alternative B, no ACECs would be proposed for designation, but these areas would still receive protection for their relevant and important values from an emphasis on natural ecosystems and processes in other resource programs. Primary drivers of beneficial impacts would include expanded restrictions and prohibitions on surface-disturbing activities. In potential ACECs containing rare plants (all ACECs except the Gunnison Gravels ACEC), closing areas to livestock grazing, limiting grazing to active movement only in some riparian areas, and eliminating domestic goat and sheep grazing would provide additional protections from adverse impacts.

Under Alternative C, active management to achieve biological objectives within the D-E NCA would provide incidental protections from adverse impacts on potential ACECs, whether or not they are proposed for designation. Special management within ACECs proposed for designation would be targeted to protect their relevant and important values. Restrictions on surface-disturbing activities would offer beneficial impacts for nearly all potential ACECs not proposed for designation. In ACECs containing rare plants (all ACECs except the Gunnison Gravels ACEC), limiting livestock grazing to active movement only on 4,662 acres of potential ACECs not designated under this alternative would provide additional protections from adverse impacts.

Overall, impacts on ACECs under Alternative D would be similar to those under Alternative C; however, active management to achieve biological objectives under this alternative would be somewhat less ambitious than that under Alternative C and there would be fewer restrictions on uses in this alternative than in Alternatives B and C. However, Alternative D would propose the most acres for ACEC designation, offering special management that would protect the most relevant and important values from adverse impacts. The Big Dominguez Canyon potential ACEC, not proposed for designation, would receive protection from management for the Dominguez Canyon Wilderness and cultural resources. Most of the River Rims potential ACEC, not proposed for designation, is within the Gunnison River ACEC, which would be designated under this alternative, and would therefore receive protection from ACEC management. Outside of Gunnison River ACEC, restrictions on surface-disturbing activities and designating the majority of routes for non-motorized travel would help protect the values from adverse impacts.

Overall, impacts on ACECs under the Proposed Plan Alternative would be similar to those under Alternative C, but active management to achieve biological objectives would occur in a less ambitious manner. The Proposed Plan Alternative would propose the third-fewest acres for ACEC designation behind Alternatives A and B. Like Alternative D, the Big Dominguez Canyon potential ACEC would receive protection from management for the Dominguez Canyon Wilderness and cultural resources. Application of restrictions on surface-disturbing activities would offer protection for ACEC values from adverse impacts in both designated and undesignated ACECs as described above. All potential ACECs contain rare plants under this alternative; therefore, limiting livestock grazing to active movement only would provide additional protections from adverse impacts.

## Cumulative Impacts

Cumulative impacts on ACECs could result from non-BLM actions and decision on lands adjacent to ACECs. While protections exist within ACECs, population growth, development, and recreation throughout the D-E NCA may, over time, encroach upon these areas, causing potential degradation of the important and relevant resources, such as through displacement of species, habitat fragmentation, and changes to the visual landscape that could indirectly affect resources within ACECs. Impacts would be greater in areas where recreation areas, such as SRMAs or

ERMAs, or development were adjacent to an ACEC. The BLM would adaptively manage to protect ACEC values and minimize impacts where applicable and feasible.

## 4.5.2. National Trails

The Old Spanish NHT is the only national trail adjacent to or within the planning area boundary. Portions of the congressionally designated route are located within the BLM Uncompahgre Field Office to the south and the BLM Grand Junction Field Office to the north. This section discusses impacts on the Old Spanish NHT from proposed management actions of other resources and resource uses. Existing conditions concerning the Old Spanish NHT are described in section 3.4.2, National Trails.

As described in the 1968 National Trails System Act (NTSA), Section 3(3), “National historic trails... follow as closely as possible and practicable the original trails or routes of travel of national historic significance. Designation of such trails or routes shall be continuous, but the established or developed trail, and the acquisition thereof, need not be continuous on site. National historic trails shall have as their purpose the identification and protection of the historic route and its historic remnants and artifacts for public use and enjoyment.” Furthermore, as described in section 3.4.2 of this Proposed RMP, the nature and purposes of the Old Spanish NHT are to afford the public the opportunity to connect to the trail resources and the trail story.

### Methods of Analysis

Baseline information in section 3.4.2, National Trails, described the condition of the Old Spanish NHT and informed this analysis. Also, all laws pertinent to determining effects on NHTs (e.g., NHPA, NTSA) were considered and included in criteria for determining impacts.

#### *Indicators*

Adverse impacts on the Old Spanish NHT are assessed by applying the criteria of “adverse effect” as defined in the implementing regulations for Section 106 of the NHPA (36 CFR 800). Substantial interference and incompatibility with the nature and purposes of national trails are evaluated in accordance with the NTSA section 7 (c) and BLM Manual 6280 (BLM 2012g).

Indicators of adverse impacts on the Old Spanish NHT include the following:

- Conflict with management goals and objectives that sustain NHT qualities
- Result in proposed uses that are incompatible with maintaining NHT qualities
- Loss of integrity or in some cases a loss of archeological information resulting from physical damage or destruction of all or parts of an NHT
- Alteration of a significant element of a trail
- Introduce visual, atmospheric, or audible elements that diminish the integrity of the NHT’s historic character
- Increased access to trail resources, resulting in increased use, erosion, looting, and vandalism
- A lack of action, which, in certain cases, can allow a trail resource to deteriorate

Indicators of substantial interference and incompatibility with the nature and purposes of the Old Spanish NHT include the following:

- the BLM's ability to effectively manage the nature and purposes of the trail, trail resources, qualities, values, uses (including public access and enjoyment) and associated settings is affected.
- A major relocation of the national trail management corridor would be required in order to provide for the conservation and enjoyment of the nationally significant resources, qualities, values, and associated settings of the areas through which such trails may pass, or the primary use or uses of the trail.
- The characteristics that made the trail worthy of designation are affected.
- Federal Protection Components are affected, including high-potential historic sites or high potential route segments that are located on public land.
- National historic trail properties are affected, including remnants and artifacts from the associated period of use that may be eligible or listed on the National Register and/or determined by the national trail administering agency to qualify as possible high potential historic sites or high potential route segments.
- The agency's ability to manage the trail for the purpose of identifying and protecting the historic route and its historic remnants and artifacts for public use and enjoyment, including interpretation, education, appreciation, and vicarious experiences is limited.

### ***Assumptions***

This analysis includes the following assumptions:

- Congressional designation of a trail as part of the National Trails System signifies that the trail area is of significant scenic, historic, cultural, recreational, or natural value.
- Impacts on the NHT are assessed by applying the criteria of adverse effect, as defined in 36 CFR 800.5a and the criteria of substantial interference and incompatibility with the nature and purposes of the national trail, as described in BLM Manual 6280 (BLM 2012g). "An adverse effect is found when an action may alter the characteristics of a historic property that qualify it for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, workmanship, feeling, or association. Adverse effects may include reasonably foreseeable effects caused by the action that may occur later in time, be farther removed in distance, or be cumulative."
- Substantial interference is assessed by determining if an activity or use affects (hinders or obstructs) the nature and purposes of a designated national trail.
- The BLM will follow 36 CFR 800, Section 106 and the Colorado Protocol when addressing Federal undertakings; therefore, adverse effects on the NHT would be appropriately mitigated.
- NHT protection and mitigation measures apply to all proposed Federal or federally assisted undertakings, and would be applied at project design and implementation phases.
- Mitigation, for national trails according to BLM policy (BLM Manual 6280, BLM 2012g), means to eliminate or moderate, to the greatest extent possible, intensity and duration of the

adverse impact on the nature and purposes; resources, qualities, values, and associated settings; and the primary use or uses of the national trail from incompatible multiple-use activities. Mitigation may include compensating for the impact by replacing or providing substitute resources or environments.

- Degradation of the NHT from natural processes (e.g., erosion) would continue regardless of avoidance of human caused impacts.
- Potential impacts on the NHT and its setting from subsequent undertakings (implementation of the planning decisions or site-specific project proposals) require separate compliance with NEPA and Section 106.
- Uses which will not substantially interfere with the nature and purposes of the OSNHT may be permitted.
- Efforts shall be made to avoid activities incompatible with the purposes for which the OSNHT was established.
- Traces of the Old Spanish NHT could exist throughout the area referred to as the Hunting Ground (area of the D-E NCA between Highway 50 and the Gunnison River corridor). Therefore, this area defines the analysis area for this section of Chapter 4.

Implementing management for the following resources would have negligible or no impact on national trails and are therefore not discussed in detail: geological and paleontological resources, noxious and invasive weeds, soils and water quality, wilderness, lands with wilderness characteristics, air resources, science, livestock grazing, ACECs, WSRs, WSAs, and watchable wildlife areas.

## **Direct and Indirect Impacts**

Compliance with the requirements of Section 106 of the NHPA would continue under all alternatives. Potential effects from subsequent undertakings for all resources, resource uses, and special designations would be addressed at the project design and implementation phase. Required separate compliance with Section 106 would result in eligible segments of the NHT being identified, evaluated, mitigated (if necessary), and nominated to the NRHP. The NHT area is assumed to contain remnants, artifacts, and other properties eligible for the National Register of Historic Places, pending evaluation.

Adverse effects on eligible NHT sites and segments would be avoided or mitigated. Through this process, adverse effects would be minimized or eliminated, although residual effects and adverse effects as defined by 36 CFR, Part 800 would be possible. An NHT is usually evaluated by NHPA criteria by its surface manifestation (e.g., ruts and associated sites) and viewshed integrity, which can be easily lost through project implementation. Adverse effects, especially on the viewshed, resulting from ongoing unevaluated or unsupervised activities, natural processes, and unanticipated events such as wildfire, would continue. Under all alternatives, the BLM would continue to work with the National Park Service and local non-Federal partners to manage the Old Spanish NHT. Once the Old Spanish NHT trail-wide comprehensive plan is completed by the National Park Service and the BLM in cooperation with the Old Spanish Trail Association, the trail-wide conservation plan may provide further information to guide management of the portion of the NHT on BLM-administered lands. This information could include high potential

historic sites, high potential route segments, interpretive themes, auto tour route opportunities, and trail marking opportunities.

The Old Spanish NHT may have segments and sites that are significant for their scientific data potential. Actions that cause physical damage or destruction, or the lack of action and neglect, can result in impacts on these resources the same as those described in section 4.3.3, Cultural Resources. These adverse impacts would be long-term, because once a resource is damaged or disturbed, the impact cannot be reversed.

### ***Impacts from Management of Priority Species and Vegetation, Special Status Species and Natural Communities, and Non-Special Status Fish and Wildlife***

Across all alternatives, vegetation management measures addressing land health, plant diversity, restoring natural processes, promotion of desired plant communities, maintaining forest health, and reducing effects on rangeland during drought would largely be compatible with NHT management goals and preservation. Similarly, measures to protect special status species and measures protecting other fish, wildlife, and plants would provide indirect protections for the trail and viewshed by limiting effects due to surface disturbance, erosion, and setting.

Many of the measures would maintain and improve soil health, and maintain or restore the historic setting. However, mechanical treatments could affect the trail's surface manifestations and viewshed. Ground-disturbing mechanical vegetation treatments could modify trail ruts and sites by disrupting the spatial relationships of artifacts and site features, and breaking artifacts. Long-term recreation opportunities within the trail corridor would not be impacted by vegetation management. However, recreation opportunities may be limited on a site-specific basis for short periods of time depending on vegetation treatment processes and restrictions on access to the trail area due to project parameters.

Alternative A would continue to allow vegetation treatments and other habitat improvements on a case-by-case basis, resulting in the continued potential for impacts on the NHT.

Alternative B would allow fewer ground-disturbing activities, but would also limit the role of active management in improving habitats overlapping the NHT. As such, there would be few short-term impacts from treatments and other activities, but there would also be limited long-term potential for improving conditions that support NHT management goals.

Because Alternative C includes the most ambitious objectives for biological resources, it could result in more short-term impacts in the form of vegetation treatments and other activities, but it would ultimately result in the most improved long-term conditions that support the NHT management goals.

Alternative D and the Proposed Plan Alternative, both propose objectives for biological resources that would potentially result in short-term damage by altering the NHT's natural setting with visual intrusions or obvious landscape scars but result in a long-term improvement to the natural setting with restored vegetation communities. However, through project design and application of BMPs, these impacts can be mitigated.

### ***Impacts from Management of Fire and Fuels***

Wildland fire would have the potential to result in direct disturbance or loss of sites associated with the NHT through the destruction or modification of structures, features, and artifacts (Tratebas, Cervený, and Dorn 2004; Greer and Greer 2001; Buenger 2003). Organic materials are especially

vulnerable to heat damage. Fire management activities would involve ground-disturbing activities that could also directly affect the NHT's footprint and associated sites by erasing the trail ruts and swales and altering the spatial relationships within archaeological sites. The removal of vegetation increases the visibility of archaeological remains, resulting in artifacts becoming more susceptible to unauthorized collection, vandalism, and subsequent erosion. Effects from prescribed fire would be similar to those of wildfire, but prescribed fire is an undertaking subject to project-level analysis and Section 106 process, and any effects could be mitigated to prevent adverse effects on the NHT or associated sites.

Under Alternative A, prescribed fire would not be allowed in desert shrub/saltbush (the vegetation community that the Old Spanish NHT traverses) and there would be no impacts from prescribed fire. Suppression of unplanned ignitions could result in the types of impacts described above.

Alternative B would not allow the use of vegetation treatments and limits manipulation of fire and fuels to the minimal amount. These actions could limit the amount of heavy equipment used during fires, which could lessen the extent of damage to the NHT corridor and/or associated sites.

Under Alternatives C and D, all ignitions in desert shrub/saltbush would be suppressed, resulting in the types of impacts described above. The Proposed Plan Alternative would allow for unplanned wildfire in the Hunting Ground and would seek to minimize ground-disturbing fire suppression activities. Therefore, this alternative would result in fewer impacts than Alternatives C or D.

### ***Impacts from Management of Cultural Resources***

Under all alternatives, measures to protect cultural resources include protective designations and stipulations and restrictions on surface disturbance. All of these measures would indirectly protect the NHT from damage. Alternatives B and C, because they utilize a prohibition on surface-disturbing activities around sites allocated to public, scientific, conservation, and experimental uses, would provide more protection for the NHT than Alternatives D and the Proposed Plan Alternative, which rely on SSR.

However, Alternative C and the Proposed Plan Alternative contain the most measures for promoting public awareness, cultural resource education and stewardship in the D-E NCA. Public education, stewardship programs, and increasing awareness for the significance of historic resources can alleviate impacts from public visitation at cultural sites, and protect resources from vandalism or inadvertent damage (Kelly 2007).

Under all alternatives, excavations could impact the NHT footprint. The trade off, and mitigation for these effects, is recordation of the information in minute detail for future researchers to see, interpret, and further understand the data collected during excavation. Alternative D and the Proposed Plan Alternative prioritize Section 110 efforts on inventory that include research excavation of eligible sites and would be most likely to result in the types of impacts described above.

### ***Impacts from Management of Scenic Values***

Visual resource management has the potential to impact the natural scenic qualities of trails. Under Alternative A, the portion of the Old Spanish NHT that crosses the D-E NCA is being managed as VRM Class III. VRM Class III areas allow for moderate changes to the landscape that may be noticeable, and development may be permitted that could impact the scenic qualities of the trail.

The action alternatives vary little in proposed VRM class objectives, with all action alternatives considering differing levels of VRM Class I and II throughout the planning area. The historic landscape associated with the NHT can contribute to the visual character and be considered in determining VRM classifications. VRM Class I and II designations provide protection of the trail footprint as well as its viewshed. Effects would be directly and indirectly reduced where designations limit surface-disturbing activities in the more sensitive VRM class areas. Use of the visual resource contrast rating system during project planning could reduce the effect of visual intrusions on the historic setting of the NHT. Visual intrusion on the setting of cultural resources must be considered in the Section 106 process regardless of VRM designation, which would provide additional opportunities to mitigate any effects on the historic landscape.

Under Alternative A, the portion of the Old Spanish NHT that crosses the D-E NCA is being managed as VRM Class III. VRM Class III areas allow for moderate changes to the landscape that may be noticeable, and development may be permitted that could impact the scenic qualities of the trail.

Alternatives B, C and the Proposed Plan Alternative propose managing the NHT corridor and surrounding area as VRM Class II, which would largely preserve the existing character of the landscape and maintain the integrity of the NHT's setting. Only limited modifications to the existing landscape would be allowed, therefore there would be very little increase in impacts on the viewshed.

Under Alternative D, the corridor would be managed as VRM Class I, which would be more protective than other alternatives by preserving the existing character of the landscape and requiring that any changes not attract attention. This gives the highest level of viewshed protection possible and there would be little or no change to the landscape beyond current conditions.

### ***Impacts from Management of Recreation***

The D-E NCA designation and regional population growth is anticipated to attract more recreational use to the D-E NCA, which would have the potential for indirect effects on the NHT from recreation or intentional vandalism or unauthorized collection. Increased use of the internet by interested individuals to disseminate information about trail ruts, swales, and associated archaeological sites and encourage visitation to these areas can expose the resources to collection by uninformed visitors, which reduces the interpretability of the site and removes precious and irreplaceable archeological materials from their original contexts, or obliteration of sites entirely when it consists of a limited artifact scatter (Kelly 2007).

Increased recreation use can affect the NHT, its historic landscape, and associated sites through direct disturbance (riding or driving on the trail footprint), soil compaction, altered surface water drainage, erosion, intrusions to setting, and unauthorized collection or vandalism such as the use of metal detection devices (Nyaupane et al. 2006; Pinter and Kwas 2005). The potential for these effects increases when there is an increase in population, there is a change in recreation use that alters the visual or audible character of the setting, or when recreational use is concentrated in sensitive areas. The effect of repeated uses or visits over time could also increase the intensity of effects; repeated visits to sites can create social trails, and direct people to trail segments that are too sensitive for heavy use or create access to remote segments that were previously undisturbed. Continuing and enhancing interpretation and public education of the NHT can vest the public in resource protection and respect for its historic values.



Under Alternative A, the area around the NHT corridor (i.e., the Hunting Ground RMA that is described below in the action alternatives), has no specific management actions for recreation management associated with it. As an undesignated recreation area, recreation activities would be managed to achieve the goals and objectives of other resource uses including NHT management. However, the recreation approach taken in Alternative A would lead to more dispersed and less structured recreation throughout the D-E NCA. This type of recreation, when combined with expected increases in visitation, could make it difficult for the BLM to monitor and effectively enforce vandalism and unauthorized collection of cultural resources associated with the NHT. Under Alternative A, the BLM would continue to allow the use of metal detectors, which could lead to unauthorized collection of NHT resources.

Under Alternatives B and the Proposed Plan Alternative, managing the Hunting Ground as an ERMA along with developing a connective trail between Whitewater and Delta would increase the intensity of allowed use of these areas and the risk for direct, indirect, and inadvertent damage to the trail footprint and associated archaeological resources. However, complementary management actions, including prohibitions or limitations on SRPs, reducing route density, and limiting camping would offset many of these impacts. Both alternatives would also prohibit metal detecting (unless administratively authorized), which would protect resources left behind by travelers using the trail and would help ensure that they remain intact.

Because a recreation management area would not be designated in the Hunting Ground under Alternative C, the types of impacts from recreation under this alternative would be similar to those under Alternative A. However, metal detecting would be prohibited (unless administratively authorized), which would protect resources left behind by travelers using the trail and would help ensure that they remain intact.

Under Alternative D, the Hunting Ground would be managed as an SRMA for heritage tourism associated with the NHT. In general, this management would promote increased public understanding and appreciation of the NHT. On the other hand, such a management approach could lead to increased vandalism and unauthorized collection of NHT resources, as awareness grows regarding these sensitive resources.

### ***Impacts from Management of Educational Use***

Under Alternatives B, C, D, and the Proposed Plan Alternative, the NHT would be managed for auto-touring along Highway 50 and county-maintained roads, and would include developed interpretive opportunities, such as roadside kiosks and brochures. These measures may enhance appreciation and understanding of the fragile and finite nature of the NHT; however, it can also lead to effects from access, degradation from use (e.g., popularity of the trail to the point of adverse impacts under the NHPA or substantial interference under the NTSA), vandalism, and unauthorized collection. There would be no similar action under Alternative A.

### ***Impacts from Management of Transportation and Travel***

Travel management without limitation or designation can result in adverse impacts such as degrading the integrity and setting of sensitive trail segments and associated resources, and unauthorized collection, looting, or vandalism of sites. Under all alternatives, restricting vehicle use to existing or designated trails reduces the risk of these impacts and helps protect the integrity and setting of the NHT. The closure of areas to multiple methods of travel provides the greatest protection. Direct effects are identified through inventory of the trail segments, and adverse effects addressed through avoidance by redesign or mitigation of roads and trails on, through, or

around the trail footprint. Ongoing indirect effects on the NHT from use of designated trails are less likely to be detected or monitored and enforcing restrictions is difficult. Unauthorized travel would probably continue, and the potential risk of damage to the trail footprint and unauthorized collection or vandalism would likely continue.

Under all alternatives, the area around the NHT corridor (the Hunting Ground RMA in the action alternatives) would be designated as limited to designated routes for motorized vehicles and would continue to result in the types of impacts as described above.

Alternatives C and D would result in a higher number of route closures in the Hunting Ground area and these routes would be rehabilitated, resulting in a more natural landscape in this area. Such management would enhance the visual setting associated with the NHT. The greater number of routes in the Hunting Ground in Alternatives A, B and the Proposed Plan Alternative would not result in the same impact.

Under Alternative D, the BLM, with partners (e.g., local governments, trail organizations, user groups, service providers, and tourism councils), would design and construct a non-motorized trail to provide retracement opportunities within the trail corridor. This would enhance appreciation for the trail.

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

The development and operation of transportation systems, pipelines, transmission lines, communication sites, renewable energy resources, and other land use authorizations can disturb large tracts of land and would impact the NHT if these developments were within the footprint or viewshed of the NHT. Under all alternatives, defining exclusion and avoidance areas for ROWs and other realty actions in and around the NHT reduces the potential for effects resulting from discretionary actions at those locations. Siting ROWs along existing corridors does not reduce the potential for effects on the NHT, such as in the area along U.S. Highway 50.

According to BLM policy (Manual 6280, BLM 2012g), to the greatest extent possible, for national historic trails, the BLM shall consider locating proposed rights-of-way outside of Federal protection components, high potential historic sites, high potential route segments. The BLM may approve proposed rights-of-way, subject to terms and conditions that are related to the policy and purposes of the NTSA. The BLM may permit rights-of-way that will not substantially interfere with national trail purposes, and shall make efforts, to the extent practicable, to avoid rights-of-way that would be incompatible with the purposes for which the national trail was established.

Under Alternative A, there are two utility corridors—the West-wide Energy Corridor (1–5 miles wide) and Unaweep Canyon (0.5-mile wide)—that could accommodate land use authorizations and have the resulting surface-disturbing activities. The small portion of the West-wide Energy Corridor that falls within the D-E NCA could cross traces of the NHT. In addition, activities that may be permitted within either utility corridor could impact the viewshed of the NHT similarly to those impacts described above under Impacts from Management of Scenic Values.

Under Alternatives B, C and the Proposed Plan Alternative, the entire NCA would be a ROW exclusion area (with exceptions), which would protect the Old Spanish NHT and its resources from surface-disturbing activities associated with land use authorizations. Under the Proposed Plan Alternative, however, a 75-foot buffer along Highway 50 would be managed as a ROW

avoidance area, which would not provide as much protection to the NHT as Alternatives B and C, but would allow for additional interpretation opportunities for the NHT.

Under Alternative D, the area around the NHT would be managed as a ROW avoidance area, which would provide limited protections through restrictions and required mitigation.

### ***Impacts from Management of National Trails***

Management actions regarding the Old Spanish NHT would increase opportunities for education and recreation related to the NHT, which would lead to increased stewardship of trail-related resources. However, increased awareness would also increase the potential for vandalism and theft of trail-related resources.

Under Alternative A, there would be no specific management of the Old Spanish NHT other than what is prescribed by law and policy for the congressionally designated portion of the trail. Traces not designated could be damaged by recreational use, which is largely unmanaged for in the Hunting Ground under this alternative.

Under Alternatives B, C, D, and the Proposed Plan Alternative, the entire area between Highway 50 and the rim above the Gunnison River would be managed as the Trail Management Corridor (23,131 acres), preserving and restoring the historic context of a larger area than under Alternative A. Interpretive opportunities would be developed within this corridor, improving opportunities for trail-related education and stewardship but also increasing the risk of damage to the NHT as described above. Actions to improve the naturalness of the corridor would improve management of trail resources, particularly with VRM Class I management being proposed under Alternative D. The designation of a larger trail management corridor would provide more opportunities for trail-related recreation than under Alternative A. The development of a non-motorized trail to provide for retracement opportunities under Alternative D would provide additional opportunities for visitors to connect with the past than under the other alternatives.

### **Summary of Impacts from Alternatives**

Under Alternative A, the lack of restrictions for surface disturbance or protections for the viewsheds surrounding the Old Spanish NHT could hamper preserving the trail's footprint and result in adverse impacts on the NHT's visual setting. In addition, the unmanaged nature of recreation under this alternative would lead to adverse impacts on trail resources. Lack of active NHT management under this Alternative would also fail to provide opportunities for NHT-related education and recreation.

Under all action alternatives, the designation of a 23,131-acre trail management corridor would preserve the NHT viewshed, and protect the NHT from adverse impacts and substantial interference. All four action alternatives would also improve opportunities for trail-related education and recreation to varying extents. The BLM would take actions to protect the trail management corridor from adverse impacts and provide education and interpretation opportunities that would enhance awareness and appreciation of the Old Spanish NHT, resulting in beneficial impacts.

Under Alternative B, sensitive soil areas would receive more protection from impacts associated with travel management infrastructure as quantified in Tables 4.31 through 4.34, when compared to Alternative A. Route closures would protect sensitive soils from motorized uses on 60 more

miles, mechanized uses on 54 more miles, and non-motorized/mechanized uses on 52 more miles than Alternative A.

Under Alternatives B and the Proposed Plan Alternative, management of the Hunting Ground as an ERMA with an associated travel management route system would increase the risk for direct, indirect, and inadvertent damage to the trail footprint and associated archaeological resources. Management of the Hunting Ground as ROW exclusion under both alternatives would provide greater protection to the NHT from adverse impacts than Alternative A. However, the Proposed Plan Alternative would allow for limited ROW development within a ROW avoidance area along Highway 50.

Under Alternative C, route closures and other restrictions implemented throughout the Hunting Ground would result in greater protection of NHT-related resources. However, access to the NHT and the trail story would be limited to auto-tour opportunities. Under Alternative C, sensitive soil areas would receive the most protection from impacts associated with travel management infrastructure as quantified in Tables 4.31 through 4.34. Route closures would protect sensitive soils from motorized uses on 98 more miles, mechanized uses on 98 more miles, and non-motorized/mechanized uses on 76 more miles than alternative A.

Under Alternative D, management of the Hunting Ground for retracement and auto-tours as well as managing the corridor as VRM Class I would result in the greatest opportunities for trail-related education and recreation. This approach would also result in the greatest protection of the viewshed of the NHT. However, this management approach would lead to increased public awareness that could result in adverse impacts from additional vandalism and unauthorized collection of NHT resources.

Under the Proposed Plan Alternative, sensitive soil areas would receive more protection from impacts associated with travel management infrastructure as quantified in Tables 4.31 through 4.34, when compared to Alternatives A and D. However, the Proposed Plan Alternative would provide fewer protections than Alternatives B and C. Route closures would protect sensitive soils from motorized uses on 55 more miles, mechanized uses on 53 more miles, and non-motorized/mechanized uses on 45 more miles than alternative A.

## Cumulative Impacts

The CIAA used to analyze cumulative impacts on national historic trails includes the entire planning area; the Old Spanish NHT is the only national trail adjacent to or within the planning area boundary. Portions of the congressionally designated route are located within the BLM Uncompahgre Field Office to the south and the BLM Grand Junction Field Office to the north. Management of the Old Spanish NHT in those field offices is similar to the management considered in Alternative A.

Past, present, and reasonably foreseeable actions with the potential to have cumulative impacts on the Old Spanish NHT include continued oil and gas development (outside the D-E NCA), ROW location, and increasing recreation and visitor use in the region that puts additional pressure on the NHT. As discussed, management of the Old Spanish NHT is coordinated with tribes, the National Park Service, affected agencies, willing landowners, partners, and interested parties. Development of management plans that safeguard the nature and purposes of the NHT and that direct protection of the values for which the Old Spanish NHT was designated by adjacent BLM

field offices or Federal land managers, has the potential to decrease degradation and assist in the preservation of natural, cultural and historic trail resources.

### 4.5.3. Wild and Scenic Rivers

This section discusses the impacts on WSRs from proposed management actions of other resources and resource uses. Existing conditions concerning WSRs are described in section 3.4.3, Wild and Scenic Rivers.

## Methods of Analysis

### Indicators

Indicators of impacts on WSRs include the following:

- Any potential change to the ORVs, tentative classification (i.e., wild, scenic, recreational), free-flowing condition, or water quality of the river segment or corridor area from its current state, as described in section 3.4.3, Wild and Scenic Rivers, and Appendix O, Wild and Scenic River Suitability Report.

Adverse impacts would be the result of actions that degrade ORVs, alter the tentative classification the free-flowing condition, or water quality of the segment or corridor area from its current state. Beneficial impacts would be the result of actions that protect or enhance ORVs, the free-flowing condition, or water quality of the segment or corridor area from its current state.

The preliminary tentative classification and identified ORVs for each segment are summarized in Table 4.63, Summary of Wild and Scenic River Study Segments.

**Table 4.63. Summary of Wild and Scenic River Study Segments**

River or Creek	Preliminary Tentative Classification	Outstandingly Remarkable Values	Alternative Determined Eligible/Suitable <sup>a</sup>				
			A	B	C	D	PPA <sup>b</sup>
Gunnison River Segments 1	Scenic	Recreational, fish, historical, cultural	X	X <sup>c</sup>	X		
Gunnison River Segment 3	Recreational	Recreational, fish, historical, cultural	X	X <sup>d</sup>	X		
Big Dominguez Creek Segment 1	Wild	Scenic, recreational, wildlife, geological, cultural	X		X		
Big Dominguez Creek Segment 2	Scenic	Scenic, wildlife, geological, cultural	X		X		
Little Dominguez Creek Segment 1	Wild	Scenic, wildlife, geological, cultural	X		X		
Little Dominguez Creek Segment 2	Scenic	Scenic, Wildlife, geological, cultural	X		X		
Rose Creek	Wild	Scenic	X		X		
Escalante Creek Segment 1	Scenic	Scenic, recreational, wildlife, geological, fish	X		X		

River or Creek	Preliminary Tentative Classification	Outstandingly Remarkable Values	Alternative Determined Eligible/Suitable <sup>a</sup>				
			A	B	C	D	PPA <sup>b</sup>
<b>Escalante Creek Segment 2</b>	Recreational	Fish, wildlife	X		X		
<b>Cottonwood Creek</b>	Wild	Vegetation	X	X	X		X

<sup>a</sup>Segments would continue to be managed as eligible under Alternative A. Identified segments would be determined suitable under the action alternatives.

<sup>b</sup>Proposed Plan Alternative

<sup>c</sup>The portion of the Gunnison River downstream of Sand Flats would be determined suitable; the remainder would be determined not suitable and released from WSR interim protective management.

<sup>d</sup>The portion of the Gunnison River upstream of Escalante Creek would be determined suitable; the remainder would be determined not suitable and released from interim protective management.

Documentation of the process used to determine suitability can be found in the Draft Wild and Scenic River Suitability report (Appendix O). The analysis looks at the 0.25-mile study corridor on BLM-administered land to discuss impacts.

### ***Assumptions***

The analysis includes the following assumptions:

- All eligible stream segments under consideration for WSR designation will be managed under interim protective measures required by the WSR Act and BLM Manual 6400, *Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, Planning, and Management* (BLM 2012c) until the Record of Decision for this RMP is adopted. At that time, any stream segment not found suitable for inclusion in the NWSRS would lose its interim protection. Stream segments that remain eligible or determined suitable would continue to be managed under interim protective measures. This procedure and the interim protective measures would ensure that the values for which these river segments were found eligible or suitable are not compromised until Congress makes a decision regarding WSR designation;
- If WSR protection is not provided (i.e., if segments are found not suitable and released from further study under the WSR Act), provisions may still remain to protect the identified WSR values under a combination of existing plans and policies and actions proposed under the action alternatives of this RMP. These provisions protect streamside and riparian habitats, riparian and aquatic wildlife, water quality, recreation, cultural and visual resources; and
- The BLM would not permit any actions that would adversely affect the free-flowing condition, water quality, outstandingly remarkable values (ORVs), or tentative classification of any eligible or suitable segments. As such, implementing management actions in this RMP would not adversely impact these segments; impacts will not be discussed for Alternatives A and C. For Alternatives B, D, and the Proposed Plan Alternative, in which some or all segments are found not suitable and thus lose interim protection, the impacts from other management prescriptions to WSR values are analyzed, because the values for which the segments were found eligible would still be present.

Implementing management actions for the following resources would have negligible or no impact on WSRs and are therefore not discussed in detail: air resources; national trails; and watchable wildlife areas.

## Direct and Indirect Impacts

The potential impact on each stream segment depends upon the ORVs identified for the segment and the tentative classification of the segment. Segments classified as recreational would allow for the greatest level of development in the study corridor while segments classified as wild must remain relatively undeveloped. Segments classified as scenic fall in between. In the D-E NCA, adverse impacts on WSR values would come mostly from recreation, livestock grazing, and lands and realty developments.

For eligible WSR streams and study corridors determined not suitable, management actions that restrict surface-disturbing actions to protect other resources could provide indirect protections for tentative classifications and a number of ORVs, including cultural, vegetation, fish, scenic, wildlife, and geological. As noted above, for streams and study corridors determined suitable, interim WSR management would provide direct protection for tentative classifications and ORVs.

Table 4.64, Acres of WSR Segments Overlapping Surface Disturbance Restrictions by Alternative, below, shows the acres of WSR study segments, regardless of WSR management, that would receive protection from restriction on surface-disturbing activities. In addition to the timing limitations shown below, the entire D-E NCA would be subject to a timing limitation between May 15 and July 31 to protect migratory birds, although timing limitations to protect other species also fall within that time frame.

**Table 4.64. Acres of WSR Segments Overlapping Surface Disturbance Restrictions by Alternative**

	Alt A	Alt B	Alt C	Alt D	Proposed Plan Alt
Subject to PSD	0	20,291	17,817	17,194	10,989
Subject to SSR	0	1,969	6,245	5,685	13,386
Subject to TL	0	12,145	11,751	819	6,632

Source: BLM 2012i

For WSR stream segments and study corridors determined not suitable, the indirect protections from management actions that restrict surface-disturbing actions for other resources would vary based on the type of surface-disturbing restriction. Prohibit surface disturbance would provide a high level protection for tentative classifications and for ORVs that would be threatened by surface disturbing activities (e.g., cultural, vegetation, and scenic). Site-specific relocation and timing limitations would provide less protection. Projects that might threaten tentative classifications and ORVs would be implemented with mitigation for other resources. If there was overlap between the other resources and the tentative classification or ORVs, WSR values would also receive protection. For example, a SSR to protect riparian vegetation would provide protection for a vegetation ORV.

Of the 20,291 acres of WSR study segments that would be protected by prohibitions on surface-disturbing activities under Alternative B, 13,111 acres (63 percent of the corridor acreage surround eligible segments) of segments determined not suitable would receive indirect protection. Of the 1,969 acres of WSR study segments that would be protected by SSR restrictions, 1,673 acres (88 percent of the corridor acreage surround eligible segments) of segments determined not suitable would receive indirect protection. Finally, of the 12,0145 acres of WSR study segments that would be protected by TL restrictions, 7,256 acres (60 percent of the corridor acreage surround eligible segments) of segments determined not suitable would receive

indirect protection during some portion of the year outside of the May 15 – July 31 time frame when all segments would receive protection.

Under Alternative D, 53 percent of WSR study segments would receive indirect protection from PSD restrictions; 19 percent would receive indirect protection from SSR restrictions, and 3 percent would receive indirect protection from TL restrictions during some portion of the year outside of the May 15–July 31 time frame when all segments would receive protection.

Of the 10,989 acres of WSR study segments that would be protected by prohibitions on surface-disturbing activities under the Proposed Plan Alternative, 9,926 acres (73 percent of the corridor acreage surrounding eligible segments) of segments determined not suitable would receive indirect protection. Of the 13,386 acres of WSR study segments that would be protected by SSR restrictions, 10,733 acres (90 percent of the corridor acreage surrounding eligible segments) of segments determined not suitable would receive indirect protection. Finally, 6,632 acres (97 percent of the corridor acreage surrounding eligible segments) of WSR study segments determined not suitable would be protected by TL restrictions. They would receive indirect protection during some portion of the year outside of the May 15–July 31 time frame, when all segments would receive protection. Table 4.65 depicts the surface disturbance limitations/protectations for the river segments that were determined not suitable.

Table 4.65 shows a breakdown of the different surface disturbance restrictions for other resources for each eligible stream segment determined not suitable in each alternative. A segment that is determined suitable would be managed under interim protections that would directly protect WSR tentative classifications and ORVs. As such, under alternatives where segments are determined suitable, no acres of protection from surface-disturbing restrictions for other resources are reported. For example, under Alternative C, all segments would be determined suitable, therefore all segments would be protected with WSR interim management, and no acres of surface-disturbing restrictions for other resources are reported.

All lands in the NCA are withdrawn from locatable mineral entry and closed to mineral leasing and mineral material sales. These legislative actions would protect WSR tentative classifications and ORVs. As such, they are also reported in Table 4.65.

**Table 4.65. Surface Disturbance Limitations/Protectations for Unsuitable Segments**

Limitations/Protectations	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)	Proposed Plan Alt (Acres)
<b>Big Dominguez Creek Segment 1</b>					
Segments determined not suitable	4,573	4,573	0	4,573	4,573
PSD	0	3,444 (75%)	0	1,823 (40%)	1,697 (37%)
PSD–Timing	0	1,686 (37%)	0	482 (10%)	1,063 (23%)
SSR	0	333 (7%)	0	1,735 (38%)	2,248 (49%)
Withdrawn from mineral location	4,573 (100%)	4,573 (100%)	0	4,573 (100%)	4,573 (100%)
Closed to mineral leasing	4,573 (100%)	4,573 (100%)	0	4,573 (100%)	4,573 (100%)



Limitations/Protections	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)	Proposed Plan Alt (Acres)
Closed to mineral material sales	4,573 (100%)	4,573 (100%)	0	4,573 (100%)	4,573 (100%)
<b>Big Dominguez Creek Segment 2</b>					
Segments determined not suitable	352	352	0	352	352
PSD	0	300 (85%)	0	335 (95%)	112 (32%)
PSD–Timing	0	352 (100%)	0	0	240 (68%)
SSR	0	10 (3%)	0	17 (5%)	240 (68%)
Withdrawn from mineral location	352 (100%)	352 (100%)	0	352 (100%)	352 (100%)
Closed to mineral leasing	352 (100%)	352 (100%)	0	352 (100%)	352 (100%)
Closed to mineral material sales	352 (100%)	352 (100%)	0	352 (100%)	352 (100%)
<b>Cottonwood Creek</b>					
Segments determined not suitable	4,734	1,002	0	4,734	1,002
PSD	0	616 (61%)	0	3,636 (77%)	373 (37%)
PSD–Timing	0	0	0	0	0
SSR	0	93 (9%)	0	361 (8%)	308 (31%)
Withdrawn from mineral location	4,734 (100%)	1,002 (100%)	0	4,734 (100%)	1,002 (100%)
Closed to mineral leasing	4,734 (100%)	1,002 (100%)	0	4,734 (100%)	1,002 (100%)
Closed to mineral material sales	4,734 (100%)	1,002 (100%)	0	4,734 (100%)	1,002 (100%)
<b>Escalante Creek Segment 1</b>					
Segments determined not suitable	1,824	1,824	0	1,824	1,824
PSD	0	1,484 (81%)	0	462 (25%)	462 (25%)
PSD–Timing	0	324 (18%)	0	324 (18%)	239 (13%)
SSR	0	116 (6%)	0	1,359 (75%)	1,356 (75%)
Withdrawn from mineral location	1,824 (100%)	1,824 (100%)	0	1,824 (100%)	1,824 (100%)
Closed to mineral leasing	1,824 (100%)	1,824 (100%)	0	1,824 (100%)	1,824 (100%)
Closed to mineral material sales	1,824 (100%)	1,824 (100%)	0	1,824 (100%)	1,824 (100%)
<b>Escalante Creek Segment 2</b>					
Segments determined not suitable	1,103	1,103	0	1,103	1,103
PSD	0	665 (60%)	0	637 (58%)	532 (48%)
PSD–Timing	0	59 (6%)	0	0	53 (5%)
SSR	0	172 (17%)	0	444 (40%)	540 (49%)

Limitations/Protections	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)	Proposed Plan Alt (Acres)
Withdrawn from mineral location	1,103 (100%)	1,103 (100%)	0	1,103 (100%)	1,103 (100%)
Closed to mineral leasing	1,103 (100%)	1,103 (100%)	0	1,103 (100%)	1,103 (100%)
Closed to mineral material sales	1,103 (100%)	1,103 (100%)	0	1,103 (100%)	1,103 (100%)
<b>Gunnison River Segment 1</b>					
Segments determined not suitable	4,136	1,178	0	4,136	4,136
PSD	0	871 (74%)	0	3,913 (95%)	1,734 (42%)
PSD–Timing	0	1,153 (98%)	0	0	2,356 (57%)
SSR	0	104 (9%)	0	45 (1%)	2,341 (57%)
Withdrawn from mineral location	4,136 (100%)	1,178 (100%)	0	4,136 (100%)	4,136 (100%)
Closed to mineral leasing	4,136 (100%)	1,178 (100%)	0	4,136 (100%)	4,136 (100%)
Closed to mineral material sales	4,136 (100%)	1,178 (100%)	0	4,136 (100%)	4,136 (100%)
<b>Gunnison River Segment 3</b>					
Segments determined not suitable	3,638	1,991	0	3,638	3,638
PSD	0	1,512 (76%)	0	3,241 (89%)	1,846 (51%)
PSD–Timing	0	1,810 (91%)	0	9 (<1%)	1,501 (41%)
SSR	0	79 (4%)	0	43 (1%)	1,434 (39%)
Withdrawn from mineral location	3,638 (100%)	1,991 (100%)	0	3,638 (100%)	3,638 (100%)
Closed to mineral leasing	3,638 (100%)	1,991 (100%)	0	3,638 (100%)	3,638 (100%)
Closed to mineral material sales	3,638 (100%)	1,991 (100%)	0	3,638 (100%)	3,638 (100%)
<b>Little Dominguez Segment 1</b>					
Segments determined not suitable	3,898	3,898	0	3,898	3,898
PSD	0	3,086 (79%)	0	2,160 (55%)	2,160 (55%)
PSD–Timing	0	1,831 (47%)	0	0	875 (22%)
SSR	0	381 (10%)	0	1,205 (31%)	1,593 (41%)
Withdrawn from mineral location	3,898 (100%)	3,898 (100%)	0	3,898 (100%)	3,898 (100%)
Closed to mineral leasing	3,898 (100%)	3,898 (100%)	0	3,898 (100%)	3,898 (100%)
Closed to mineral material sales	3,898 (100%)	3,898 (100%)	0	3,898 (100%)	3,898 (100%)
<b>Little Dominguez Segment 2</b>					

Limitations/Protections	Alt A (Acres)	Alt B (Acres)	Alt C (Acres)	Alt D (Acres)	Proposed Plan Alt (Acres)
Segments determined not suitable	852	852	0	852	852
PSD	0	655 (77%)	0	389 (46%)	316 (37%)
PSD—Timing	0	852 (100%)	0	0	535 (63%)
SSR	0	61 (7%)	0	287 (34%)	535 (63%)
Withdrawn from mineral location	852 (100%)	852 (100%)	0	852 (100%)	852 (100%)
Closed to mineral leasing	852 (100%)	852 (100%)	0	852 (100%)	852 (100%)
Closed to mineral material sales	852 (100%)	852 (100%)	0	852 (100%)	852 (100%)
<b>Rose Creek</b>					
Segments determined not suitable	1,326	1,326	0	1,326	1,326
PSD	0	948 (71%)		744 (56%)	744 (56%)
PSD—Timing	0	0	0	0	0
SSR	0	171 (13%)		342 (26%)	372 (28%)
Withdrawn from mineral location	1,326 (100%)	1,326 (100%)	0	1,326 (100%)	1,326 (100%)
Closed to mineral leasing	1,326 (100%)	1,326 (100%)	0	1,326 (100%)	1,326 (100%)
Closed to mineral material sales	1,326 (100%)	1,326 (100%)	0	1,326 (100%)	1,326 (100%)
<b>Notes:</b> <ol style="list-style-type: none"> <li>Prohibit surface disturbance and timing may overlap in Alternatives A–D, but are mutually exclusive in the Proposed Plan Alternative. Site-specific relocation may overlap with PSD and timing in all alternatives.</li> <li>Some segment acres overlap with acres of other segments. For example acres for Escalante Creek Segment 2 overlap with acres for Gunnison River Segment 3 where Escalante Creek empties into the Gunnison River. The overlap that may occur between SSR, PSD, and timing would also occur where these segment overlaps occur.</li> <li>Percentages are based on BLM acres and were calculated using the total acres for each segment determined not suitable and the acres of restrictions that overlap that total. For example, 1,326 acres of Rose Creek were determined not suitable under Alternative B. Of those 1,326 acres, 948 acres would have PSD restrictions. 948 is 71% of 1,326.</li> <li>All mineral withdrawals and closures are legislative and would apply regardless of RMP decisions.</li> </ol>					

### ***Impacts from Management of Geological and Paleontological Resources***

Under all alternatives, where restrictions on surface-disturbing activities to protect geological or paleontological resources overlap WSR study segments, the ORVs, tentative classification, and free-flowing condition of segments would be indirectly protected, particularly segments with geological ORVs (i.e., Big Dominguez Creek Segments 1 and 2, Little Dominguez Creek Segments 1 and 2, and Escalante Creek Segment 1).

***Impacts from Management of Priority Species and Vegetation, Special Status Species and Natural Communities, Non-Special Status Fish and Wildlife, and Soils and Water Quality***

Properly functioning riparian/wetland vegetation communities provide soil stabilization, soil filtration, and habitat for fish and wildlife species. In turn, properly functioning riparian/wetland vegetation communities can provide protection for vegetation, fish, and wildlife ORVs.

Where restrictions on surface-disturbing activities to protect priority vegetation, special status species, fish and wildlife, and soil resources overlap WSR study segments, the tentative classification, free-flowing **condition**, and most ORVs of the segments would be indirectly protected. Refer to Table 4.64, Acres of WSR Segments Overlapping Surface Disturbance Restrictions by Alternative, for differences between alternatives. While prohibitions on surface-disturbing activities would help protect most ORVs, it could limit the BLM's ability to enhance the recreational ORVs if facilities needed for recreation (e.g., boat launches, kiosks, restrooms) are prohibited, because of the need to protect other resources or values. Where SSR restrictions are in place instead of PSD restrictions, facilities needed to protect recreation could be developed if they do not impact the resource for which the restriction was designed to protect. This would allow actions to protect the recreation ORV.

Under all alternatives the BLM would work collaboratively with Gunnison River stakeholders to manage flows on the Gunnison River to support flow-dependent values (i.e., recreation, fish). This would enhance the free-flowing **condition** of the Gunnison River, as well as protect or enhance the recreational and fish ORVs by providing adequate flows for recreationists and for fish habitat.

Under Alternative B, the emphasis on natural process and restricting resource uses (e.g., livestock grazing, route construction, camping), particularly in riparian areas, would benefit fish, wildlife, and vegetation ORVs along the Gunnison River (portions of Segments 1 and 2 determined not suitable), Big Dominguez Creek (Segments 1 and 2), Little Dominguez Creek (Segments 1 and 2), and Escalante Creek (Segments 1 and 2).

Alternative D and the Proposed Plan Alternative would allow active and passive management techniques to meet riparian health objectives. By allowing the use of more management techniques to achieve the desired level of landscape health, the BLM can respond to and influence changing conditions on a shorter time scale.

Surface-disturbing activities would be subject to SSR restrictions in exemplary vegetation communities (as defined by CNHP), which would provide direct protection to the narrowleaf cottonwood/skunkbush sumac riparian woodland along Cottonwood Creek. In this area, surface-disturbing activities would either be moved outside of the area or within the area to the location with the least amount of impact.

The free-flowing **condition** of the Gunnison River would be enhanced by the removal of barriers to river channel movement. Future actions that restrict the natural migration of the Gunnison River would also be minimized.

Water quality in eligible streams would be protected through allowable use restrictions that protect water quality throughout the NCA. Implementing both allowable use restrictions (PSD and SSR) would provide indirect protection of WSR-eligible stream segments. Under Alternatives B and C, PSD restrictions would apply, and under the Proposed Plan Alternative, SSR would apply. The indirect protective effect would be greatest under Alternative B (50 meters). Alternative C would be less protective than Alternative B (30 meters). Under Alternative D and the Proposed Plan

Alternative, water quality would be indirectly protected with SSR restrictions (30 meters). These alternatives would provide less protection than Alternatives B or C. That said, Alternative D and the Proposed Plan Alternative would provide more protection than Alternative A, which would have no allowable use restrictions.

### ***Impacts from Management of Noxious and Invasive Weeds***

Weed treatments in the short-term may impact ORVs or tentative classification as evidence of human activity may be seen. However in the long-term, weed treatment and eradication would benefit ORVs as riparian health improves. Impacts would be similar under all alternatives.

### ***Impacts from Management of Fire and Fuels***

Unplanned fire ignitions could cause short- or long-term damage to vegetation, which could damage habitat for wildlife, cause soil erosion and impact water quality as well as riparian vegetation depending on the extent and severity of the fire. In the short term, fire and fuel treatments remove vegetation and cause bare areas to be more susceptible to soil loss or weed invasion. In the long term, wildland and prescribed fires and fuel treatments reduce dense vegetation, create vegetation mosaics, and promote vertical stratification, improve herbaceous understory, and return nutrients to the soil. Often, fire and fuel treatments result in improved vegetation diversity and ecosystem function and lower the risk for an uncharacteristically large or severe wildfire. Emergency stabilization and rehabilitation efforts can help stabilize soils and reestablish desirable plant communities. This could impact segments with wildlife, vegetation, scenic, and fish ORVs (i.e., all segments).

Under Alternative B, only minimal amounts of fire and fuel manipulation would be permitted and there would be no vegetation treatments for the purposes of improving the FRCC or to meet biological and cultural resource objectives. In the short-term ORVs may be protected from alteration due to both natural and prescribed fire. Over the long-term, however, the lack of vegetation treatments could lead to conditions that are outside the natural range of variability and could increase the risk of high intensity wildfires.

Under Alternatives D and the Proposed Plan Alternative, a suite of tools to manage fire and fuels would be implemented. While some ORVs may be diminished in the short-term, it is likely that biological ORVs would benefit over the long-term from planned and unplanned fire, fuel treatments, and post-fire rehabilitation.

### ***Impacts from Management of Cultural Resources***

Where restrictions on surface-disturbing activities to protect cultural or historical resources overlap WSR study segments, the ORVs, tentative classification, and free-flowing condition of segments would be indirectly protected, particularly segments with cultural or historical ORVs (i.e., Gunnison River Segments 1 and 3, Big Dominguez Creek Segments 1 and 2, and Little Dominguez Creek Segments 1 and 2). Otherwise impacts would be negligible. Refer to Table 4.64, Acres of WSR Segments Overlapping Surface Disturbance Restrictions by Alternative, for differences between alternatives.

### ***Impacts from Management of Wilderness***

Under all alternatives, the Dominguez Canyon Wilderness would be managed in accordance with the Wilderness Act. Protection of the wilderness characteristic of naturalness would protect biological ORVs; protection of opportunities for solitude or primitive and unconfined recreation

would protect recreation ORVs; and protection of the undeveloped nature would protect tentative classifications. Where WSR study corridors overlap the Wilderness (11,047 acres of Big and Little Dominguez Creeks, Rose Creek, and portions of the Gunnison River and Escalante Creek), WSR values would be protected.

The instream flow water right held by the CWCBC to protect wilderness values would assist in protecting the free-flowing **condition** of Big and Little Dominguez Creeks and Rose Creek.

All or portions of the following segment study areas for a total of 11,047 acres (40 miles) are within the Dominguez Canyon Wilderness and would receive protections from wilderness management under all alternatives: study area boundary on the west bank of Gunnison River Segments 1 and 3 (the river and study area boundary on the east bank of the river are not within the Wilderness), Big Dominguez Creek Segments 1 and 2, Little Dominguez Creek Segments 1 and 2; Rose Creek, and Escalante Creek Segments 1 and 2.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Management of lands identified for wilderness characteristics protection, including VRM Class I, closure to motorized and mechanized vehicle use, and **SSR restrictions**, would provide protection for the ORVs and free-flowing **condition** of the segments that overlap these lands.

Under Alternative B the BLM would protect and enhance wilderness characteristics on all four units found to possess those characteristics. Portions of two study segments and their ORVs (Gunnison River Segment 1 and Cottonwood Creek) would receive indirect protection from the management of lands with wilderness characteristics. Both of these segments would be determined suitable under Alternative B, and no other segments would receive indirect protection from the management of lands with wilderness characteristics. The study area boundary on the west bank of Gunnison River Segment 1 would receive protection from management of the Gunnison Slopes unit (the river and study area boundary on the east bank of the river are not within the lands with wilderness characteristics unit) and Cottonwood Creek would receive protection from management of the Cottonwood Canyon unit.

Under the Proposed Plan Alternative, the BLM would protect and enhance wilderness characteristics on two of the four units found to possess those characteristics: Dry Fork of Escalante and Cottonwood Canyon. The Cottonwood Canyon unit overlaps the Cottonwood Creek study segment, which would provide this segment with some incidental protection. Because this segment would also be managed as suitable under this alternative, it would already be protected. However, lands with wilderness management would not provide the water necessary to protect the vegetation ORV for this stream segment. No other segments would receive indirect protection from the management of lands with wilderness characteristics under this alternative.

### ***Impacts from Management of Scenic Values***

Managing the segments according to VRM Class I or II objectives would provide direct protection to segments with a scenic ORV (i.e., Big Dominguez Creek Segments 1 and 2, Little Dominguez Creek Segments 1 and 2, Rose Creek, and Escalante Creek Segment 1) or a wild or scenic tentative classification (i.e., Gunnison River Segment 1, Big Dominguez Creek Segments 1 and 2, Little Dominguez Creek Segments 1 and 2, Rose Creek, Escalante Creek Segment 1, and Cottonwood Creek) by requiring that alterations to the landscape be done in such a way so as not to dominate the viewshed. If alterations cannot be mitigated to reach the VRM class objective, they would not be permitted. Because most large-scale developments cannot meet VRM Class I

or II objectives, managing to protect the scenic values of the D-E NCA would generally preclude most large-scale developments. In turn, this would provide indirect protection to vegetation, wildlife, and geological ORVs that could be threatened by surface-disturbing activities.

Table 4.66, Acres of WSR Segments Overlapping VRM Classes by Alternative, shows the total acres of segments overlapping each VRM class. Although Alternative D would not determine any segments to be suitable for inclusion in the NWSRS, it offers the most protection to segments from VRM Class I management. As a result, large-scale developments that might threaten the identified ORVs would be precluded in the area as they would not likely meet VRM Class I objectives.

**Table 4.66. Acres of WSR Segments Overlapping VRM Classes by Alternative**

	Alternative A	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<b>VRM Class I</b>	11,449	16,128	11,986	18,023	14,640
<b>VRM Class II</b>	5,571	9,767	13,908	7,871	11,263
<b>VRM Class III</b>	4,717	0	0	0	0
<i>Source: BLM 2012i</i>					

### ***Impacts from Management of Recreation***

Recreation area management would protect the recreation ORVs along the Gunnison River and Escalante Creek Segment 1. Managing the areas as SRMAs would protect the high quality recreational experience, whereas managing the areas as ERMAs would only protect the recreational activity itself. Because these segments have been identified as having outstandingly remarkable opportunities for recreational activities, including float-boating, swimming, wading, camping, and rare chutes, falls, and plunge-pools, SRMA management would provide more protection for the overall recreational experience.

Increased recreation has the potential to impact ORVs associated with each segment. Uses in riparian/wetland vegetation that could degrade the riparian/wetland vegetation ORV, thereby potentially indirectly diminishing the wildlife ORV associated with canyon tree frog breeding pools, include camping and trail development. These activities can also cause soil erosion and degrade water quality, potentially impacting fish and vegetation ORVs.

Under Alternative B, 8,933 acres of six WSR study segments (Cottonwood Creek, Escalante Creek Segments 1 and 2, Gunnison River Segments 1 and 3, and Big Dominguez Creek Segment 2) would be within ERMAs. The combination of less dispersed recreation in the D-E NCA with the interdisciplinary approach to management of the ERMAs would provide some resource protection to the ORVs. However, dispersed camping and trail development, should it occur within the WSR study corridor, could impact the fish, cultural, wildlife, and vegetation, ORVs along the segments. Recreation management along the Gunnison River and Escalante Canyon would also enhance the recreational ORV of those segments. It should be noted that Cottonwood Creek and portions of the Gunnison River would be found suitable under this alternative so all ORVs would be protected along these segments.

Under Alternative C, 2,580 acres of Gunnison River Segments 1 and 3 would be within the Gunnison River SRMA. Management of the SRMA would focus on recreational float-boating activities, which would enhance the recreational ORV along the Gunnison River.

Under Alternative D, 12,737 acres of six WSR study segments (Cottonwood Creek, Escalante Creek Segments 1 and 2, Gunnison River Segments 1 and 3, and Big Dominguez Creek

Segment 2) would be within SRMAs. Applying SSR or PSD Restrictions within the WSR study corridor would protect ORVs on those segments. Refer to Table 4.64, Acres of WSR Segments Overlapping Surface Disturbance Restrictions by Alternative, for overlapping restrictions on surface-disturbing activities. Concentrating recreation in these areas would also enhance the recreation ORVs along the Gunnison River and Escalante Creek by enhancing the overall recreational experience. However, concentrated recreation, particularly along Escalante Creek and Cottonwood Creek, could impact the non-recreational ORVs from trampling vegetation and constructing or developing facilities to support the user's experience.

Under the Proposed Plan Alternative, 5,814 acres of five WSR study segments (Escalante Creek Segments 1 and 2, Gunnison River Segments 1 and 3, and Big Dominguez Creek Segment 1) would be within SRMAs. Impacts would be the same as those described for Alternative D but over a smaller area. The ORVs, tentative classification, and free-flowing condition of the segment would likely incur additional protection from recreation management, as the SRMA is designed to complement WSR management. An additional 5,680 acres of WSR study segments would be within ERMAs (Gunnison River Segments 1 and 3, Escalante Creek Segments 1 and 2, Big Dominguez Creek Segment 1, and Cottonwood Creek). It should be noted that Cottonwood Creek would be found suitable under this alternative.

### ***Impacts from Management of Scientific Use and Educational Use***

WSR study segments could benefit from interpretation and environmental education efforts that teach users about the importance of protecting the ORVs and encouraging them to recreate in the area in ways that do not threaten the resources. In addition, conducting research to learn more about resources associated with or connected to the ORVs would result in a better understanding of how best to provide long-term protection. This could result in either direct (where science and education are aimed directly at the ORV) or indirect (where the ORV benefits or protections result from monitoring, research, or education programs aimed at other programs) impacts. These impacts would be the greatest under Alternatives C, D, and the Proposed Plan Alternative, where monitoring and education are emphasized.

### ***Impacts from Management of Livestock Grazing***

Uses in riparian/wetland vegetation that could degrade the riparian/wetland vegetation ORV, thereby potentially indirectly diminishing the wildlife ORV associated with canyon tree frog breeding pools, include livestock grazing and active movement. These activities can also cause soil erosion and degrade water quality, potentially impacting the fish ORV. Because livestock grazing would be managed consistent with the priority vegetation/habitats objectives, adjustments to grazing management would be implemented in cases where biological objectives are not being met due to grazing activities. These adjustments could include changes in stocking rate, the timing of grazing, and additional terms and conditions, and could mitigate impacts from livestock grazing to vegetation ORVs.

In order to protect riparian habitat under Alternative B, livestock use would be closed along Rose Creek and Escalante Creek Segment 1 and would be limited to active movement only in the riparian corridors along the Gunnison River, Big and Little Dominguez Creeks, and Escalante Creek Segment 2. Closing livestock grazing would prevent any landscape modifications due to grazing and would protect the scenic ORV along Rose Creek and Escalante Creek Segment 1. It would also prevent trampling and aid in the maintenance of healthy riparian/wetland vegetation communities, which in turn provide healthy habitat for aquatic wildlife, providing indirect benefits to the wildlife, vegetation, and fish ORVs along Escalante Creek Segment 1. Limiting



livestock use to **active movement only** in riparian areas would limit the duration of grazing and trampling and aid in the maintenance of healthy riparian/wetland vegetation communities, which in turn provide healthy habitat for aquatic wildlife. This would provide indirect protection to the fish ORVs along the Gunnison River and Escalante Creek Segments 1 and 2 and the canyon tree frog in Big and Little Dominguez Creeks. In addition, livestock use would be prohibited in Upper Escalante Canyon in order to protect Colorado hookless cactus, which would provide indirect protection to the scenic ORV by precluding any range improvements that might be needed to support livestock grazing.

Alternative D provides the least protection to the ORVs of any of the alternatives. Only a portion of Big Dominguez Creek Segment 1 would be open to livestock **active movement** only. The rest of the segments would be available for livestock grazing.

Under the Proposed Plan Alternative, livestock use would be limited to **active movement** only in the riparian corridors along Big and Little Dominguez Creeks, and Escalante Creek. Impacts would be **similar to those** described for Alternative B but would occur over a smaller area.

### ***Impacts from Management of Transportation and Travel***

Motorized and mechanized vehicle use could impact ORVs and tentative classification of WSR study segments. Closing areas to motorized or mechanized travel would protect areas from impacts associated with such use, including vegetation trampling, disturbance of wildlife habitat, soil erosion and runoff, noise, and the potential for the exacerbation of these impacts due to increased accessibility or use. Closure of areas to motorized and mechanized use would indirectly protect all ORVs.

Designating routes for certain motorized and mechanized uses would help protect ORVs to a lesser degree. During route designation, the need for resource protection was taken into account when considering whether or not to keep routes open for certain uses or close them. Where routes remain open to motorized or mechanized use, the use of the routes could still impact ORVs, particularly under Alternatives A and D, where the most miles of routes would be available for the most uses (71 and 57 miles, respectively).

Under all alternatives, segments within the Dominguez Canyon Wilderness would be closed to motorized and mechanized travel, providing absolute protection to ORVs susceptible to degradation from such disturbance, including wildlife, fish, scenic, and vegetation.

Alternative B would close the most WSR study corridors outside of Dominguez Canyon Wilderness to motorized and mechanized travel, including portions of the suitable Cottonwood Creek and Gunnison River, and would have the **third-fewest** miles of routes open to public motorized or non-motorized use within the study corridor (33 miles). Additional portions of Cottonwood Creek would also be subject to seasonal closures to motorized mechanized travel.

The **Proposed Plan Alternative** has the least amount of closures for motorized and mechanized travel outside of the Dominguez Canyon Wilderness, **and 21.4** miles of routes would be open to public motorized or non-motorized use within the study corridor, the **second-fewest** of any alternative.

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

WSR study segments could be impacted by the location of ROWs, including utility lines, communication sites, and access roads. Location of ROWs would primarily impact scenic ORVs

but could also cause soil erosion, vegetation loss, and habitat fragmentation that could impact wildlife, fish, and vegetation ORVs. Because the D-E NCA is predominately designated as ROW-exclusion under the action alternatives, there would be no impacts from the development of new ROWs in areas identified as ROW exclusion. Furthermore, none of the segment study corridors are within either the designated West-wide Energy Corridor or the Unaweep Canyon utility corridor so development within those corridors does not pose a threat to WSR segments, their ORVs, tentative classification, or free-flowing condition.

The consolidation of land management would enhance the BLM's ability to manage the segment for the protection of the ORVs and tentative classification.

Under Alternative D, a portion of the D-E NCA would be managed as ROW avoidance, which could allow some ROW development, which would primarily impact scenic ORVs. It could also cause soil erosion, vegetation loss, and habitat fragmentation that could impact wildlife, fish, and vegetation ORVs.

### ***Impacts from Management of Areas of Critical Environmental Concern***

Where WSR study segments overlap ACECs, ACEC management would complement WSR objectives.

Under Alternative B, no areas would be designated as ACECs so there would be no impact on WSR study segments.

Except for Alternatives A and C where the ORVs, free-flowing condition, and tentative classification would be maintained through WSR interim protective management, Alternative D would provide the most protection to the WSR study segments, even though none would be identified as suitable under this alternative. Larger portions of Gunnison River Segments 1 and 3 would overlap the Gunnison River ACEC, which would be managed to protect unique and sensitive plant and wildlife resources. Managing the ACEC to promote the delisting of federally listed fish species, those identified as ORVs along the segments, would benefit the fish ORVs. Prohibiting surface-disturbing activities in the ACEC would also provide protection to the cultural ORV along the segment by prohibiting actions that could damage or destroy the resource.

Nearly all of Escalante Creek Segments 1 and 2 would receive protection from the Escalante Canyon ACEC, which would be designated to protect, in part, the same plant, fish, and wildlife values identified as ORVs for the segments. Management of the ACEC, including applying SSR restrictions, managing as ROW exclusion, and managing livestock grazing and active movement to protect the plant values, would directly benefit the plant, fish, and wildlife ORVs along the segments.

Under the Proposed Plan Alternative, only 2,915 acres of three segments, Escalante Creek Segment 1 and Gunnison River Segments 1 and 3 would overlap ACECs. Impacts from the overlap of a small portion of Escalante Creek Segment 1 with the Escalante Canyon ACEC would be similar to those described for Alternative D, but would occur over a smaller area. Small portions of the Gunnison River study corridor would overlap the River Rims ACEC, which would be managed to protect unique and sensitive plant resources. While the ACEC would not be managed to protect any ORVs along the Gunnison River, prohibiting surface-disturbing activities in the area would provide some localized protection to the cultural ORVs along the segment where there is overlap.

### ***Impacts from Management of Wild and Scenic Rivers***

Where WSR study segments are determined eligible or suitable for inclusion in the NWSRS, the BLM could take no action that would diminish the ORV, free-flowing **condition**, or tentative classification of the segment. Continuing to manage segments as eligible (Alternative A) or a determination of suitability (Alternatives B, C, and the Proposed Plan Alternative) would result in direct protection of the ORVs, free-flowing **condition**, and tentative classification of the segments. Where segments are determined not suitable for inclusion in the NWSRS, management of other resources could provide indirect protection to the free-flowing **condition** and ORVs identified, which would still be present even if the segment is not suitable and released from further WSR study.

Alternatives A and C would identify all segments as either eligible (Alternative A) or suitable (Alternative C), resulting in direct protection of the ORVs, free-flowing **condition**, and tentative classification of the segments according to WSR interim protective management requirements.

Alternative B would determine two segments, Cottonwood Creek and part of Gunnison River Segment 3 above Escalante Creek and part of Segment 1 below Sand Flats to be suitable for inclusion in the NWSRS. Only these segments would receive direct protection for the identified ORVs, free-flowing **condition**, and tentative classification. The remaining segments would be determined not suitable for inclusion in the NWSRS and would be released from further study. The identified ORVs would be impacted by decisions made for other resources, as described elsewhere in this section.

Impacts under Alternative D would be similar to those under Alternative B, except that all segments would be determined not suitable for inclusion in the NWSRS and released from further study.

Impacts under the Proposed Plan Alternative would be similar to those under Alternative B, except that only Cottonwood Creek would be determined suitable for inclusion in the NWSRS and would receive direct protection for the identified ORVs, free-flowing **condition**, and tentative classification. The remaining segments would be determined not suitable for inclusion in the NWSRS and would be released from further study. The identified ORVs would be impacted by decisions made for other resources, as described elsewhere in this section.

### ***Impacts from Management of Wilderness Study Areas***

Only very small portions of Big Dominguez Creek, Gunnison River Segment 3, and Escalante Creek Segment 1 overlap the Dominguez Canyon WSA. Direct and indirect impacts would be the same as those described under Impacts from Management of Wilderness; however the area is so small that the overlap of these areas would have a negligible impact on the ORVs, free-flowing **condition**, and tentative classification of the segments.

### **Summary of Impacts from Alternatives**

Alternatives A and C would provide the most protection for eligible or suitable WSR segments from adverse impacts, because all segments would be managed as either eligible or suitable and the BLM would take no action that would impair the free-flowing **condition**, tentative classification, or ORVs of the segments.

After Alternatives A and C, Alternative B would determine the most segments suitable for inclusion in the NWSRS and provide the same protections to those segments from adverse impacts as under Alternatives A and B but over a smaller area. Of the alternatives where segments were determined not suitable for inclusion in the NWSRS, Alternative B would provide the most opportunities for protections from adverse impacts through restrictions on surface-disturbing activities. On the other hand, because Alternative B emphasizes natural processes over hands-on management, the BLM's ability to respond to land health issues could be reduced under this alternative.

Alternative D would provide a fair amount of protection from adverse impacts for segments determined not suitable for inclusion in the NWSRS through restrictions on surface-disturbing activities and ACEC designations that overlap stream segments. Impacts would be similar to those for Alternative B, but because the BLM would take a more active approach to land management and restoration, there is greater potential for adverse impacts on biological ORVs to be mitigated under this alternative.

The Proposed Plan Alternative would provide more protection from adverse impacts on the segments than Alternative A or D, regardless of suitability determination, as there would be more acres protected by restrictions on surface-disturbing activities than with the other two alternatives. Impacts would be similar to those for Alternative B, but the area of overlapping protection would be less under this alternative.

## Cumulative Impacts

The CIAA for WSRs includes all land, regardless of ownership, within the D-E NCA and surrounding BLM field offices.

There is an agreement between the USFWS and the BOR to establish flows on the Gunnison River for the protection of endangered fish. This provides protection for the free-flowing condition and fish ORVs on the Gunnison River and Escalante Creek. In addition, the operation of the Redlands Dam downstream of Gunnison River Segment 1 ensures sufficient flows through the river to support year-round floating, which protects the recreation ORV. The operations of private land owners in Escalante Creek, which shuttles water through Escalante Creek Segments 1 and 2 for irrigation purposes downstream of these segments, provides indirect protection to the free-flowing condition and fish and wildlife ORVs for those two segments. Finally, there is a water right on the Big and Little Dominguez Creeks that provides protection to the free-flowing condition and wildlife ORVs along those segments.

Other Federal agencies considering permit applications (not under BLM authority) that could affect the free-flowing condition, ORVs, or tentative classification of any of the eligible or suitable segments would need to seek formal comments from the BLM and the BLM would discourage projects with such impacts. Other agencies would not be required to act on the BLM's comments, so the effect on eligible and suitable segments would depend on the decisions outside of BLM authority. For stream segments determined not suitable under Alternatives B, D, and the Proposed Plan Alternative, the BLM would not make recommendations based solely on the need to protect WSR values when the BLM is asked for comments on projects authorized by other agencies. Rather, if asked to comment, the BLM would focus on impacts on multiple use values, rather than focusing on compliance with the WSR Act standards for protection of ORVs, free-flowing condition, and tentative classification.

#### 4.5.4. Wilderness Study Areas

This section discusses impacts on the Dominguez Canyon WSA from proposed management actions of other resources and resource uses. Existing conditions concerning the WSA are described in section 3.4.4, Wilderness Study Areas.

The size of the Dominguez Canyon WSA would be the same under all alternatives and is described in section 3.4.4, Wilderness Study Areas. No new WSAs would be established under any alternative.

#### Methods of Analysis

##### *Indicators*

Indicators of impacts on the Dominguez Canyon WSA include the following:

- Potential changes in the inventoried wilderness characteristics (naturally appearing, opportunities for solitude or primitive and unconfined recreation, and unique or supplemental values) within the WSA:
  - Naturalness (apparent naturalness, not ecological naturalness): Impacts would result from developments or vegetation manipulations that made the area appear less natural.
  - Opportunities for Solitude or Primitive and Unconfined Recreation: Amount of visitor use; area of WSA affected by travel routes; type and number of agency provided and user-created recreation facilities; type and extent of management restrictions.
  - Unique and Supplemental Values: Severity of disturbances to cultural resources; status of indigenous species that are listed, or are candidates for listing, as threatened or endangered.

Adverse impacts would be those that degrade the three characteristics described above. Beneficial impacts would protect or enhance the three characteristics described above.

##### *Assumptions*

The analysis includes the following assumptions:

- The Dominguez Canyon WSA, the only WSA in the planning area, would continue to be managed according to BLM Manual 6330—*Management of Wilderness Study Areas* (BLM 2012e) until Congress either designates or releases all or portions of the WSA from further consideration.
- Managing the WSA according to BLM Manual 6330 will protect its wilderness characteristics in a manner than will not “impair the suitability of WSAs for preservation as wilderness” (FLPMA Section 603[c]).
- Management of the WSA is subject to valid existing rights and grandfathered uses under all alternatives, as consistent with BLM Manual 6330 (BLM 2012e).
- Maintenance of existing facilities and construction of new facilities necessary to manage permitted AUMs would be conducted in accordance with BLM Manual 6330 (BLM 2012e).

- Actions that would “impair the suitability of WSAs for preservation as wilderness” would not be permitted unless they meet one of the following exception criteria described in BLM Manual 6330 (BLM 2012e):
  - Emergencies such as suppression activities associated with wildfire or search and rescue operations.
  - Reclamation activities designed to minimize impacts on wilderness values created by Interim Management Policy violations and emergencies.
  - Uses and facilities that are considered grandfathered or valid existing rights under the Interim Management Policy.
  - Uses and facilities that clearly protect or enhance the land’s wilderness values or that are the minimum necessary for public health and safety in the use and enjoyment of wilderness values.
  - Reclamation of pre-FLPMA impacts.
- All activities approved in the WSA would be closely managed to ensure that they would not impair the area’s wilderness characteristics and thus its suitability for designation as wilderness. Preservation of wilderness characteristics within the WSA is paramount and should be the primary consideration when evaluating any proposed action or use.
- Impacts on the WSA from implementing management actions for other resources, resource uses, and special designations would be considered negligible. Allowable uses in the WSA are permitted if they meet the “nonimpairment” standard.
- The WSA, if released by Congress, would still contain wilderness characteristics, and BLM management could impact those characteristics.

Implementing management actions for the following resources and resource uses would have negligible or no impact on the WSA and are therefore not discussed in detail: geological and paleontological resources, noxious and invasive weeds, fire and fuels, recreation, science, education, land tenure and land use authorizations, national trails, and watchable wildlife areas.

## **Direct and Indirect Impacts**

For land tenure and land use authorizations and livestock grazing specifically, as stated in the assumptions (under Methods of Analysis, above), there would be no adverse impacts on the WSA from valid existing rights (e.g., ROWs) and grandfathered uses (i.e., livestock grazing), because those rights and uses were in existence at time that wilderness characteristics were found in the WSA.

There could be indirect beneficial impacts from management of other resources that would enhance wilderness characteristics; however, such effects are generally negligible, as protections are not as strict as those afforded to WSAs per BLM Manual 6330 (BLM 2012e).

All alternatives would allow resource uses in the WSA that maintain the area’s suitability for preservation as wilderness and protects the viability of current wilderness characteristics from adverse impacts. There would be no surface-disturbing activities in the WSA under any alternative, because such activities are precluded per BLM policy (BLM 2012e).

### ***Impacts from Management of Priority Species and Vegetation***

Management actions to protect priority vegetation types would preserve wilderness characteristics by promoting a more naturally appearing landscape. Priority vegetation would not be managed for under Alternative A, so any indirect preservation of wilderness characteristics would not occur under this alternative. Alternative B would result in improved vegetation community conditions in areas where there are current impacts. Alternative C would result in the greatest improvement in vegetation communities, followed by the Proposed Plan Alternative. Under Alternative D, overall conditions could decline.

### ***Impacts from Management of Special Status Species and Natural Communities, Non-Special Status Fish and Wildlife, and Soils and Water Quality***

Restrictions associated with special status species could indirectly improve the naturalness and unique and supplemental values of the WSA. If released by Congress from consideration as a WSA, these measures would help protect wilderness characteristics. If the WSA were released from its WSA status and changed to Wilderness designation, management would follow the appropriate management prescriptions. In either case, the protection of natural or cultural resources outside of the WSA or Wilderness Area would in turn lead to heightened wilderness characteristics for the existing WSA or related designation.

Alternative B would include the most restrictions that could indirectly improve the naturalness of the WSA, followed by Alternative C, Alternative D, and then the Proposed Plan Alternative. Alternative A would include no restrictions.

### ***Impacts from Management of Cultural Resources***

Indirect impacts of cultural resources restrictions would be similar to those described under Impacts from Management of Special Status Species and Natural Communities, above. Where the WSA overlaps heritage areas, management of these areas could also indirectly protect the wilderness characteristic of unique and supplemental values due to the protective measures proposed for the heritage areas.

In Alternatives B, C, D, and the Proposed Plan Alternative, wilderness characteristics would indirectly be protected due to the protective measures proposed for 66 acres of the Leonard's Basin Heritage Area that overlap the eastern part of the WSA. There would be no similar indirect protections under Alternative A.

### ***Impacts from Management of Wilderness***

The entire WSA borders the Dominguez Canyon Wilderness, which could create additional protection for the WSA under all alternatives, as the management for the areas would be similar.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Alternative B would manage lands to protect wilderness characteristics. Lands managed to protect wilderness characteristics, where adjacent to the WSA, could create additional protection for the WSA, as the management for the areas would be similar. A wider expanse of contiguous land containing the WSA and lands managed to protect wilderness characteristics could therefore heighten protection within the WSA and further ensure the integrity of wilderness characteristics. In Alternative B, where the Gunnison Slopes Unit is adjacent to the north-central portion of the

WSA, additional protection of the WSA could result. There would be no similar protections under Alternatives A, C, D, or the Proposed Plan Alternative.

### ***Impacts from Management of Scenic Values***

The designation of the WSA as VRM Class I would contribute to the protection of the wilderness characteristics of natural appearance. Impacts would be the same under all alternatives.

### ***Impacts from Management of Air Resources***

Reducing noise in the D-E NCA under Alternative C would protect the perception of solitude, maintaining or restoring the natural quiet of the WSA. There would be no similar impacts under Alternatives A, B, D, or the Proposed Plan Alternative.

### ***Impacts from Management of Livestock Grazing***

Livestock grazing is the only grandfathered use allowed in the WSA. Under all alternatives, there would be no impacts on the WSA from grazing, because the law provides for, and the BLM's policy is to continue, grandfathered uses in the same manner and to the same degree of physical and visual impacts that existed at the time of the passage of the FLPMA (BLM 2012e). Grazing occurred at the time that wilderness characteristics were found in the WSA; as such, it does not impact the WSA's wilderness characteristics. Structures used for grandfathered-grazing activities, such as fences, stock trails, springs, and stock ponds, exist in the WSA, would continue to be maintained.

### ***Impacts from Management of Transportation and Travel***

In Alternatives A and B, the WSA would continue to be closed to public motorized and mechanized use (administrative motorized use would be permitted). Closing the WSA to public motorized and mechanized use, not including administrative use (e.g., motorized use associated with grandfathered uses and valid existing rights such as livestock grazing permittees), or closing it to mechanized use, would protect the wilderness characteristics by restricting activities that could impact natural appearance and opportunities for solitude and primitive/unconfined recreation.

In Alternatives C, D, and the Proposed Plan Alternative, the WSA would be limited to designated routes for motorized and mechanized travel. There is the potential for degradation of wilderness characteristics from motorized and mechanized travel on designated routes. Such travel could impact natural appearance and opportunities for solitude and primitive/unconfined recreation.

### ***Impacts from Management of Areas of Critical Environmental Concern***

A total of 66 acres of ACECs overlap the WSA in Alternative A, thereby potentially indirectly protecting wilderness characteristics. Alternative D could indirectly protect 424 acres of the WSA, Alternative C 151 acres, and the Proposed Plan Alternative, 92 acres. There would be no similar protections in Alternative B. Where the WSA overlaps or is adjacent to ACECs, ACEC management could indirectly protect wilderness characteristics due to the protective measures proposed for the ACECs. These protective measures would include complementary management objectives to the WSA, and in the event that the WSA is released by Congress from wilderness consideration, could offer some indirect protection of wilderness characteristics.



### ***Impacts from Management of Wild and Scenic Rivers***

Where the WSA overlaps or is adjacent to WSRs, management of these rivers could indirectly protect wilderness characteristics due to the protective measures proposed for the rivers. These protective measures would include complementary management objectives to the WSA, and in the event that the WSA is released by Congress from wilderness consideration, could offer some indirect protection of wilderness characteristics. A total of 395 acres of stream segments within the WSA would be managed to maintain their eligibility or suitability for inclusion in the NWSRS in Alternatives A and C, respectively, thereby potentially indirectly protecting wilderness characteristics. Alternative B would manage four acres as suitable. No streams would be managed as suitable in Alternatives D, so there would be no indirect protections of the WSA. Cottonwood Creek would be determined suitable for inclusion in the NWSRS under the Proposed Plan Alternative, potentially indirectly protecting wilderness characteristics.

### ***Impacts from Management of Wilderness Study Areas***

If the WSA were released by Congress from wilderness consideration, it is possible that the lands would be available for motorized and mechanized travel on designated routes. The consequent leniency in resource management would impact the solitude and natural characteristics of the area.

In Alternative B, if the WSA were released by Congress from wilderness consideration, wilderness characteristics would be preserved for the long term, because Alternative B would protect lands with wilderness characteristics and the area would continue to be closed to motorized and mechanized travel, as described above under Impacts from Management of Transportation and Travel.

Alternatives A, C, D, and the Proposed Plan Alternative would not preserve wilderness characteristics if the WSA were released by Congress from wilderness consideration, so any protection of wilderness characteristics would only occur indirectly from other resource management. If the WSA were released, opportunities for primitive and unconfined recreation would be protected under Alternative A by the Transportation and Travel Management decision to close the area to motorized and mechanized travel. Conversely, in Alternatives C, D, and the Proposed Plan Alternative, the WSA would be available for motorized and mechanized travel on designated routes, which would impact the area's solitude and natural characteristics.

### **Summary of Impacts from Alternatives**

Overall, impacts on the WSA would be similar under all alternatives, because the Interim Management Policy protects its wilderness characteristics in a nonimpairment manner. The main difference between alternatives would be if the WSA were released by Congress from wilderness consideration. Under Alternative B, if the WSA were released, wilderness characteristics would be preserved for the long term, because Alternative B would protect lands with wilderness characteristics and would prohibit motorized and mechanized travel. Alternatives A, C, D, and the Proposed Plan Alternative would not preserve wilderness characteristics if the WSA were released, so any protection of wilderness characteristics would only occur indirectly from other resource management, primarily from Transportation and Travel Management decisions. Alternative C's Transportation and Travel Management decisions would include more indirect protection of wilderness characteristics than Alternatives A, D, and the Proposed Plan Alternative should the WSA be released.

## Cumulative Impacts

Increasing visitation and recreation continue to have potential to impact wilderness characteristics of the WSA. Under all alternatives, the Dominguez Canyon WSA would continue to be managed according to BLM Manual 6330 (BLM 2012e) until Congress either designates or releases all or portions of the WSA from further consideration for wilderness. Because of this, there are no present or future actions, or combination of actions, likely to have significant cumulative effects on the wilderness characteristics in the Dominguez Canyon WSA, and the cumulative effects of all alternatives would be the same.

### 4.5.5. Watchable Wildlife Areas

This section discusses impacts on watchable wildlife areas that would occur from actions associated with the management of other resources. Existing conditions concerning watchable wildlife viewing areas are described in section 3.4.5, Watchable Wildlife Areas.

## Methods of Analysis

### *Indicators*

Indicators of beneficial impacts on watchable wildlife areas include the following:

- The ability to identify and create opportunities for interpretation and education related to wildlife; and
- The ability to complete wildlife habitat improvements to enhance fish/wildlife viewing opportunities, while maintaining protection of fish/wildlife species and their habitats.

Alternative D and the Proposed Plan Alternative are the only alternatives that propose the Escalante Canyon Watchable Wildlife Area. When discussing impacts under Alternatives A, B, and C, this 11,202-acre area is referred to as Escalante Canyon.

Adverse impacts would occur as a result of management actions that reduce opportunities for interpretation and education related to wildlife, or that reduce the ability of the BLM to complete wildlife habitat improvements in Escalante Canyon.

### *Assumptions*

Implementing management actions for the following resources would have negligible or no impact on watchable wildlife areas and are therefore not discussed in detail: Geological and Paleontological Resources, noxious and invasive weeds, fire and fuels, soils and water quality, cultural resources, wilderness, lands with wilderness characteristics, education, livestock grazing, land tenure and land use authorizations, WSRs, WSAs, and national trails.

## Direct and Indirect Impacts

### *Impacts from Management of Priority Species and Vegetation, Special Status Species and Natural Communities, and Non-Special Status Fish and Wildlife*

Management to promote and conserve native species as well as ecosystem diversity would enhance wildlife viewing. Alternative C proposes the most ambitious objectives to increase priority habitat rankings, which would have the most impact on wildlife viewing opportunities by improving conditions for native species. Restrictive management under Alternative B would prohibit many activities that may cause watchable wildlife to move into hiding or outside the Escalante Canyon, but this alternative also proposes fewer management actions to increase watchable wildlife populations that would improve viewing experiences in the Escalante Canyon. There are fewer actions addressing priority species and vegetation under Alternative A and improved opportunities for viewing watchable wildlife would be limited as a result.

Because Escalante Canyon is predominantly characterized by pinyon-juniper woodlands, actions that affect this vegetation community would have the most impact on the watchable wildlife area. Using vegetation treatments to improve plant composition and structure under Alternatives C and D may encourage more watchable wildlife to visit the area, thus improving viewing opportunities. A prohibition on vegetation treatments under Alternative B would not actively improve plant composition and structure nor encourage the associated increase in watchable wildlife to visit the area. Applying treatments on a case-by-case basis under Alternative A would have the same effect as Alternative B, unless treatments occurred within Escalante Canyon.

Seasonally prohibiting disruptive activities in mapped big game crucial winter range under Alternatives B, C, D, and the Proposed Plan Alternative would protect those animals and improve opportunities to view wildlife.

In addition, under Alternatives D and the Proposed Plan Alternative, fish and wildlife management that reduces human-induced stressors if big game herds are determined by CPW to be highly stressed during crucial winter periods would temporarily reduce opportunities for wildlife viewing, but it would protect herd populations over the long term and provide long-term benefits to wildlife-viewing opportunities.

Under the Proposed Plan Alternative, limiting the time that livestock would be present in the riparian areas along Escalante Creek to active movement between grazing areas would limit livestock use in the watchable wildlife area. This would limit impacts on riparian areas and on the species that depend on them. Long-term opportunities for viewing birds and other species in riparian areas are likely to improve over current conditions.

### *Impacts from Management of Scenic Values*

Management of scenic values would protect open spaces, including scenic vistas, considered integral to the identity of the D-E NCA, thus protecting and creating opportunities to view wildlife.

Under all alternatives, the land within the watchable wildlife area boundary would be managed as VRM Class I or II, limiting the types of development detrimental to wildlife habitat but potentially restricting the construction of infrastructure to facilitate wildlife viewing opportunities.

### ***Impacts from Management of Educational Use***

Actions that enhance educational values, opportunities, and awareness of wildlife viewing opportunities within the D-E NCA would complement the watchable wildlife area. Under Alternative A, there would be few actions to enhance education about Escalante Canyon, as allocation of areas and development of facilities for education/interpretation would be considered on a case-by-case basis. This would lead to no direct impacts on Escalante Canyon.

Alternative B would aim to provide opportunities for young people and the general public to learn about the natural resources of the D-E NCA, but it would prohibit development of educational/interpretational areas and facilities. Therefore, impacts on Escalante Canyon would be negligible.

Under Alternatives C and D, emphasizing the use of interpretive services and materials to educate youth and the general public of natural and cultural resources within the D-E NCA would promote a better understanding of wildlife resources and may encourage the completion of wildlife habitat improvements to enhance wildlife viewing opportunities

Alternative D and the Proposed Plan Alternative would manage the Escalante Canyon Recreation Management Area as an educational and interpretive emphasis site for natural, geological, and cultural resources, thus enhancing overall protections for the proposed Escalante Canyon Watchable Wildlife Area and increasing opportunities for wildlife viewing and thus educational opportunities within the D-E NCA.

### ***Impacts from Management of Recreation***

Actions that develop recreational facilities and promote recreational activities may attract more visitors and encourage more people to view wildlife. However, increased visitation in Escalante Canyon may also result in greater disturbance to wildlife, reducing opportunities to view wildlife. Recreational activities that result in greater amounts of human-caused noise would have a greater disruptive impact on wildlife (Knight and Cole 1995). These activities include concentrated OHV use and recreational target shooting. Where these activities occur, wildlife may be displaced, and the public would then have fewer opportunities to view wildlife.

There are no overlapping RMAs under Alternatives A and C and recreation would not be emphasized within Escalante Canyon, meaning there would be fewer focused management actions for visitors to engage in wildlife viewing activities (e.g., construction of facilities or emphasis on interpretive opportunities). Recreational target shooting would be allowed in Escalante Canyon under Alternatives A and C, which could further reduce opportunities for visitors to engage in wildlife viewing.

Under Alternative B, targeting auto touring, picnicking, white-water kayaking, climbing, and dispersed camping in the Escalante Canyon ERMA (2,881 acres) would encourage use across the entire ERMA. Providing the necessary recreation facilities to support these activities would also encourage an increase in recreational use. Both of these actions would provide more people with more opportunities to view wildlife, but they may degrade the quality of those opportunities, because increased use could encourage wildlife to move elsewhere. Under this alternative, recreational target shooting would be prohibited throughout the D-E NCA, which would prevent the impacts described above from this activity (note that restrictions on recreational target shooting do not apply to hunting).

Under Alternative D, Escalante Canyon SRMA (2,881 acres) would be located completely within the watchable wildlife area. Targeting auto touring and picnicking would focus visitor impacts along the county-maintained road corridor and may serve to limit disturbances to wildlife that would reduce viewing opportunities. Providing biological/ecological education/interpretation to help promote learning about the past and natural systems may also create opportunities for interpretation and education related to wildlife in Escalante Canyon, which in turn would reduce impacts through better stewardship. Under this alternative, recreational target shooting would not be allowed in Escalante Canyon, which would prevent the impacts described above from this activity.

Under the Proposed Plan Alternative, Escalante Canyon SRMA would overlap the watchable wildlife area on 2,829 acres: the types of impacts would be similar to those described under Alternative D. Under this alternative, recreational target shooting would not be allowed in Escalante Canyon, which would prevent the impacts described above from this activity. The types of commercial SRP activities that could occur in and near the Watchable Wildlife Area could be limited by issuing low and medium impact (Class I and II) Commercial SRPs that are consistent with RMA and ACEC objectives. This would reduce impacts on wildlife and preserve viewing opportunities.

Under the Proposed Plan Alternative, rock climbing would be intensively managed, giving the BLM more control over where the activity takes place, the types of equipment that are used, and the impacts on wildlife. This could be combined with implementing a seasonal climbing closure during critical raptor nesting seasons when active nests have been identified. Therefore, the Proposed Plan Alternative would provide the BLM with the most effective methods of protecting watchable bird species in the Escalante Canyon Watchable Wildlife Area.

### ***Impacts from Management of Transportation and Travel***

Designating roads and trails for public access would improve access within the watchable wildlife area, but resulting habitat fragmentation may encourage wildlife to move elsewhere and degrade the watchable wildlife viewing experience. Because the number of roads and trails designated for public use, including those with seasonal closures, varies only slightly across the five alternatives, impacts would be similar under all alternatives.

### ***Impacts from Management of Areas of Critical Environmental Concern***

By enhancing protection of wildlife habitat, ACECs that overlap watchable wildlife areas would provide for better wildlife viewing opportunities.

Designating a portion of Escalante Canyon as an ACEC under Alternatives A (1,895 acres) and C (2,281 acres) would enhance protection of listed plant species and unique plant associations, thereby indirectly impacting wildlife habitat in the Escalante Canyon area by providing conditions conducive to viewing watchable wildlife.

There would be no overlapping ACEC under Alternative B and therefore no impacts on Escalante Canyon from ACEC management.

Overlapping Escalante Canyon ACEC under Alternative D to match the watchable wildlife area boundaries would expand management to protect the unique and sensitive plant, fish and wildlife resources of Escalante Canyon, while educating the public about the area's unique natural hazards, plants, wildlife, fish, geological and cultural resources. Because of this expanded ACEC

management and complete overlap the watchable wildlife area boundary, Alternative D would directly enhance the protection of wildlife resources and promote wildlife viewing opportunities within the watchable wildlife area.

The types of impacts under the Proposed Plan Alternative would be similar to those under Alternative D, except that they would only occur on the 2,277 acres of ACEC that overlap the watchable wildlife area.

In addition, providing outdoor classroom opportunities related to Escalante Canyon ACEC's unique and sensitive plants, wildlife, fish, geological and cultural resources under Alternative D and the Proposed Plan Alternative would further promote the public's ability to view wildlife within the watchable wildlife area and be better stewards of those resources in the area.

### ***Impacts from Management of Watchable Wildlife Areas***

There would be no watchable wildlife area under Alternatives A, B, or C and visitors would have to create their own opportunities to view wildlife.

Under Alternatives D and the Proposed Plan Alternative, the 11,202-acre Escalante Canyon Watchable Wildlife Area would provide targeted opportunities for wildlife interpretation and education, enhancing public wildlife viewing experiences as a result. The watchable wildlife area would also direct resources for watching wildlife to the area most suitable for this activity, thereby improving the chances of viewing wildlife. In addition, wildlife habitat improvements in the watchable wildlife area would encourage more wildlife to frequent the area.

## **Summary of Impacts from Alternatives**

In general, the types of impacts under Alternatives A, B, and C would be similar due to the lack of a watchable wildlife area designation in the decision area. However, under Alternatives D and the Proposed Plan Alternative, designating the Escalante Canyon Watchable Wildlife Area-with supporting actions designed to facilitate viewing opportunities and protect wildlife habitat-would provide the greatest beneficial impacts.

## **Cumulative Impacts**

The CIAA used to analyze potential impacts on the watchable wildlife area varies by species and are composed of the game management units that intersect the planning area.

Cumulative impacts on wildlife are related to those described above for fish and wildlife and vegetation, since vegetation communities provide the habitat for wildlife species and can affect habitat for fish species (e.g., riparian vegetation). Past, present, and reasonably foreseeable future actions and conditions within the CIAA that have affected and will likely continue to affect watchable wildlife include mineral exploration and development, residential and industrial development, forestry, grazing, recreation, road construction, water diversion and withdrawals, weed invasion and spread, prescribed fires and wildfires, land planning efforts, vegetation treatments, habitat improvement projects, insects and disease, and drought. Many of these activities change habitat conditions, which then cause or favor other habitat changes. For example, wildfire removes habitat, and affected areas are more susceptible to weed invasion, soil erosion, and sedimentation of waterways, all of which degrade habitats. In general, resource use activities have cumulatively caused habitat removal, fragmentation, noise, increased human presence, and

weed spread, whereas land planning efforts and vegetation, habitat, and weed treatments have countered these effects by improving habitat connectivity, productivity, diversity, and health.

## 4.6. Social and Economic Concerns

This section analyzes impacts from management actions on social and economic conditions in the D-E NCA planning area and follows the order of topics addressed in Chapter 3:

- Tribal interests
- Public safety
- Social and economic conditions

### 4.6.1. Tribal Interests

This section discusses impacts on Native American tribal interests that would occur from actions associated with the management of other resources. Existing conditions concerning Native American tribal interests are described in section 3.5.1, Tribal Interests.

Overall socioeconomic effects from management actions are discussed in section 4.6.3, Social and Economic Conditions. Cultural and traditional tribal uses of the planning area include gathering and harvesting plants, medicines, material, hunting, fishing, and ceremonial and religious use.

Tribal consultations on the planning actions (e.g., goals, objectives, allocations, management actions) are ongoing.

### Methods of Analysis

The BLM has conducted government-to-government tribal consultations with affected, federally recognized Indian tribes (i.e., Ute Mountain Ute, Southern Ute, Ute Indian Tribe of the Uintah and Ouray Reservation) to identify tribal interest, treaty rights, and traditional cultural resources within the planning area. A Ute ethnohistory report was prepared that recorded tribal issues and concerns to be addressed in the RMP process (Ott 2010). Also, all laws, regulations, and policies pertinent to determining effects on tribal interests and resources (such as Executive Order 13007, Indian Sacred Sites) were considered and included in impacts criteria. This known information was overlain with the actions found under each alternative in Chapter 2, and conclusions were drawn on the basis of an understanding of how these types of actions may affect known and potentially discoverable resources.

#### *Indicators*

Indicators of adverse impacts on tribal interests include the following:

- Conflict with land uses, management, and economic well-being of adjacent or nearby reservations, trust lands, restricted Indian allotments, and federally tribal-dependent Indian communities.
- Conflict with the exercise of off-reservation treaty and reserved rights, including grazing **privileges**, hunting and fishing rights, gathering rights and interests, and water rights.

- Conflict with Federal trust responsibilities to tribes and individual Indians regarding real property, physical assets, or intangible property rights.
- Conflict with existing court decisions, laws, policies, executive orders, and agency agreements with tribes regarding land and resource use.
- Proposed uses that are incompatible with maintaining and identifying sensitive cultural resources and their qualities.
- Adverse effects on some types of historic properties or their settings, especially traditional cultural properties and cultural landscapes under Section 106 of the NHPA (36 CFR 800).
- Restricted access to traditionally used hunting, fishing, and gathering areas and species.
- Reduced access to traditionally used or culturally important locations such as water sources and hot springs.
- Impacts on culturally important trails or trail systems.
- Impacts on sacred sites or their settings, access, or use.

Beneficial impacts would be the result of actions that increase access or opportunities for traditional uses by tribal members.

### ***Assumptions***

This analysis includes the following assumptions:

- If Indian Trust Assets or treaty-based rights are revealed during the RMP process or implementation, the BLM will conduct consultation and fulfill its obligations under applicable treaties, the tribal trust relationship, various Federal laws, DOI and BLM regulations, and guidance and executive orders. The BLM, as a Federal agency, will continue to maintain government-to-government relationships with federally recognized Indian tribes and will consult with tribes during resource management actions affecting tribal lands and resources;
- The planning area likely includes lands where there are tribal interests and traditional cultural resources that are not currently identified; and
- There may also be unidentified conflicts with existing tribal treaty rights or claims of ownership related to traditional use areas, resources, and water sources.

### **Direct and Indirect Impacts**

Native American tribal interests include Indian Trust Assets, treaty-based rights, and reservation lands. Indian Trust Assets are legal interests in property, physical assets, or intangible property rights held in trust by the United States for Indian tribes or individual Indians. There are no known Indian Trust Assets or treaty-based rights or responsibilities of the BLM in the planning area; therefore, no further analysis is required.

There would be no direct adverse impacts from the goals, objectives, and allocations noted in the alternatives; there may be indirect impacts associated with some management actions. Indirect impacts would be those that would result from implementing the planning decisions at a later time.



Types of impacts that could occur from the planning actions include the following:

- Direct disturbance of locations or landscapes associated with traditional beliefs, resource gathering areas, hunting and fishing areas, water sources, ancestral sites, human remains, and trails.
- Alterations of visual and aural aspects of the cultural landscape's setting.
- Increased access and human presence, which could lead to increased incidents of vandalism, unauthorized collection of ancestral sites.
- Decreased tribal member access or interference with the exercise of treaty rights or cultural uses and practices such as resource gathering or hunting.
- The potential for erosion, pollution, habitat loss, and less tangible changes to natural features and resources that tribal members may consider sacred.

While visual and aural settings could be restored and it may be possible to restore some habitats, it is unlikely that some cultural or sacred uses could be restored, resulting in permanent adverse impacts for cultural uses and religious value.

Due to the overlapping nature of tribal interests and heritage resources with cultural resources, most of the adverse impacts that could occur on tribal interests and heritage resources are the same as those discussed under cultural resources, therefore they will not be repeated here. Only adverse impacts specific to tribal interests or heritage areas are discussed below.

***Impacts from Management of Priority Species and Vegetation, Special Status Species and Natural Communities, and Non-Special Status Fish and Wildlife***

Trees, shrubs, and plants or their fruits and seeds are traditionally used by tribes for subsistence, clothing, basketry, shelter, utilitarian items, and medicines. Under all alternatives, impacts would include removal, damage, or contamination of these resources, thereby making them unavailable for subsistence or traditional use. On the other hand, while there may be short term impacts from vegetation treatments, the long term impacts, such as reduction or elimination of noxious and invasive weeds and building healthier plant communities, would allow for proliferation of important plant species.

Protections of cultural resources and some vegetation communities (which can have special significance in Native American cultures) in Alternatives B through the Proposed Plan Alternative would provide protections to traditional use areas and tribal sensitive sites. Please refer to section 4.3.2.1, Priority Species and Vegetation, for an analysis of effects on vegetation communities, including those that may be important to Native American cultures. Continued consultation and cooperation with Native American tribes would allow continued compilation of information on traditional cultural properties, sacred sites, and cultural landscapes allowing better future management and protections of these sensitive areas. Alternative B would prohibit collection of plant materials except for use by Native American tribal members. This would continue to allow access into those traditional use areas for resource collection and eliminate competition from commercial plant collectors that may target the same resources.

### ***Impacts from Management of Noxious and Invasive Weeds***

Under all alternatives, depending on the treatment activity including possible herbicide use, the BLM might be unable to avoid plants identified by tribes as being important in traditional subsistence, religious, or other cultural practices (BLM 2007b). Types of impacts would be the same or similar to those described above (see Direct and Indirect Impacts). Consultation with tribes would occur prior to any action being taken to locate areas with plants that are important to the tribes and may be affected by the weed treatment.

All of the alternatives consider using early detection, rapid response, containment, and eradication of weeds, but they differ somewhat on the species that would be the focus of those control efforts. Alternatives A and B state that the focus is to be on State A-listed species and selected BLM species of concern. Alternative C and the Proposed Plan Alternative state that the focus is to be on all State-listed species and selected BLM species of concern. Alternative D states the focus to be on State A- and B-listed species and selected BLM species of concern. Assuming that the greater number of species targeted for containment and/or eradication could mean more areas impacted by the methods used, then Alternative C's and the Proposed Plan Alternative's focus on all State-listed species could present a higher risk of impacts on traditional subsistence, religious or culturally used plants from the containment or eradication methods used. In contrast, Alternative A's and B's emphasis on only State A-listed species could suggest that fewer areas would be targeted for weed treatments, therefore reducing the likelihood for impacts on tribally important plants.

Although most of the focus is on containment and/or eradication of weeds, the alternatives also consider how to prevent the further spread of weeds into areas. Alternative B encourages the use of weed-free materials for county projects; Alternatives C through the Proposed Plan Alternative require the use of weed-free materials for county projects. Alternatives C through the Proposed Plan Alternative could reduce the possibility for introducing weeds that would then compete with tribal resources or require future eradication efforts.

### ***Impacts from Management of Fire and Fuels***

Wildland fire would have the potential to result in direct disturbance or loss of tribal resources through the destruction or modification of structures, features, artifacts, rock art sites, cultural use areas, and culturally modified trees (Tratebas, Cervený, and Dorn 2004; Greer and Greer 2001; Buenger 2003). Organic materials are especially vulnerable to heat damage. Fire management activities would involve ground-disturbing activities that could also directly affect resources by altering the spatial relationships within archaeological sites or destroying important plant gathering sites. Also, using fire retardant chemicals could leave dangerous chemical residues on plant resources used in ceremonies or as food sources. Cultural sites exposed by fire or prepared for fire avoidance in prescribed burns are more susceptible to unauthorized collection, vandalism, and subsequent erosion. Ute Traditional leaders make a distinction between human intervention and ignition (both prescribed and arson) and natural ignition fires. Tribes have also mentioned concerns with the rehabilitation of burned areas and expressed concerns about the subsequent spread of noxious and invasive weeds and excessive erosion.

Effects from wildfires and prescribed fires would be similar to those from prescribed fire, but prescribed fire is an undertaking subject to project-level analysis and Section 106 process, including tribal consultation, that would help mitigate any impacts prior to the burn.

Alternative B and the Proposed Plan Alternative would have the largest area allowed to burn from natural ignitions in order to meet resource objects, whereas Alternatives A and D would have the smallest area. Impacts (of the nature described in the paragraphs above) would have a higher probability of occurrence under Alternative B and the Proposed Plan Alternative than Alternatives A and D due to Alternative B's and the Proposed Plan Alternative's larger acreage amount. Alternative C, as the middle range acreage for both the natural ignition burn area and exclusion zones, would have a lower probability of causing adverse impacts on important tribal resources than Alternative B or the Proposed Plan Alternative but a higher probability than Alternatives A or D.

Generally speaking, Alternative B would have the least amount of human intervention, such as the use of vegetation treatments, and fire management and stabilization actions, in comparison to Alternatives C through the Proposed Plan Alternative. As a result, the possible impacts on tribal resources from actions under Alternative B would have a lower probability of human-induced impacts (such as damage to important tribal resources), but they could result in fewer improvements to the vegetation communities, including important tribal plant resources. Additionally, with minimal fire management actions, emphasizing protection of property and human safety, there could be a higher probability for destruction of fragile tribal resources from fire. However, more active management and stabilization actions that also emphasize meeting resource objectives (as noted in Alternatives C through the Proposed Plan Alternative) could lessen the probability for damage or destruction from burning. More active human intervention, on the other hand, could increase the probability for human-caused damage to tribal resources (e.g., ground disturbance from using heavy equipment to create fire lines).

### ***Impacts from Management of Cultural Resources***

The D-E NCA is afforded special management measures designed to protect a variety of resource values, including cultural resources. Measures to protect cultural resources include protective designations and stipulations and restrictions on surface and vehicle use from effects due to surface disturbance, erosion, effects on setting and access leading to vandalism, inadvertent damage, and unauthorized collection of cultural resources. Protective measures may inhibit Native American cultural uses in some areas, such as restricting access to traditional use areas, traditional resources, or sensitive sites.

Excavations, however, have direct, destructive impacts on cultural resources; the very nature of excavation is to remove *in situ* cultural artifacts and destroy intact cultural depositions. The trade off, and mitigation for these effects, is recordation of the information in minute detail for future researchers to see, interpret, and further understand the data collected during excavation. Some tribes feel that excavation should be avoided when possible and that the increase in scientific knowledge is less important than leaving the cultural resources alone. Compliance with Section 106 would result in cooperation between the BLM and the tribes to determine the best options if excavation or treatment of culturally sensitive resources are required or appropriate.

The concept of managing areas to protect their heritage values at the landscape level is a key management approach in Alternatives B through the Proposed Plan Alternative and is based on ongoing consultation with the Ute Mountain Ute, the Southern Ute, and the Ute Tribes of the Uintah and Ouray Reservations. Areas identified as heritage areas are not an allocation but are defined to orient management toward the concept of these areas being managed as landscapes. Big Dominguez Canyon, High Park, and Leonards Basin Heritage Areas, and any future heritage areas considered after completion of the RMP would provide protections and focus management

on preservation of rock art localities and traditional use areas by restricting access to traditional and administrative uses and protecting the settings' integrity. Reducing general public access to heritage areas could decrease contact by visitors who could intentionally or accidentally damage resources and/or sites by collecting surface artifacts, vandalism, or illegally digging into sites.

### ***Impacts from Management of Wilderness and Wilderness Study Areas***

Protections afforded by the management measures for wilderness and WSAs would provide protections for tribal resources. Management measures include surface use and ground disturbance restrictions, prohibitions on motorized uses, VRM classifications, and other restrictions on incompatible activities. While the Wilderness and WSA designations help preserve and enhance culturally important natural resources, access limitations could result in the decreased ability of Native Americans to use traditional resources and sites. Should the WSA become designated Wilderness Areas, then these protections would continue into the future.

Should the WSA be released by Congress, under Alternatives A, C, D, and the Proposed Plan Alternative, management would revert to existing management. In effect, this would remove all of the protections currently afforded tribal resources within the WSA and overall increase the probability for the types of impacts described in the previous discussions by resources and uses, increasing the likelihood for impacts but also increasing the access to tribal resources in the WSA. However, under Alternative B, the BLM would preserve any wilderness characteristics that occur in the WSA, resulting in continued protections for tribal resources as described below under Impacts from Management of Lands with Wilderness Characteristics.

### ***Impacts from Management of Lands with Wilderness Characteristics***

Protections afforded by the management measures for lands with wilderness characteristics would provide protections for tribal resources. Management measures include surface use and ground disturbance restrictions, prohibitions on motorized uses, VRM classifications, and other restrictions on incompatible activities. While managing to protect wilderness characteristics would help preserve and enhance culturally important natural resources, there could be impacts on Native American access that could limit uses of traditional resources and sites.

These impacts would be greatest under Alternative B, because the BLM would manage 21,816 acres for the protection of wilderness characteristics. Under the Proposed Plan Alternative, the BLM would similarly protect 13,597 acres. Under Alternatives A, C, and D, the BLM would not commit to protecting any areas with wilderness characteristics. This would result in no impacts on tribal resources.

### ***Impacts from Management of Scenic Values***

Indirect impacts from managing for scenic values could include introducing visual, atmospheric, or audible elements into an area's setting or changing the character of the physical features within a setting that contribute to its religious or tribal significance. The magnitude of impact would depend on the level of management and the VRM classification allocated to an area; the impact would range from none (such as in a VRM Class I area) to possibly allowing extensive modern intrusions (such as in a VRM Class IV area). The duration of the impact would depend on the length of time needed to restore the setting to its original nature; areas with temporary disturbance and that are restored immediately would have effects lasting a few days to a few years, whereas a newly built modern facility/feature would last for many years and possibly remain permanently. However, as noted above, while visual and aural settings could be restored, it is unlikely that some

cultural or sacred uses could be restored, resulting in permanent loss of areas for cultural uses and religious value.

Under Alternative A, the decision area is divided up into the four VRM classifications; areas managed as VRM Class III or IV areas allow for moderate to major changes to the landscape that may be noticeable, and development may be permitted that would impact the scenic qualities of the cultural landscape. Areas classified as VRM Class I (wilderness areas and WSAs), which would preserve the existing character of the landscape and which would give the highest level of protection to sensitive cultural landscapes. Escalante Canyon is managed as VRM Class II, which would retain the existing character of the landscape and the level of change should be very low. While this classification would limit changes to the landscape, it would still provide protections for tribal concerns. Under Alternative B, the decision area would be managed as VRM Class I and II (93,468 acres in VRM Class I and 116,519 acres in VRM Class II). Areas classified as VRM Class I would preserve the existing character of the landscape, which would give the highest level of protection to sensitive Native American cultural landscapes. VRM Class II areas would retain the existing character of the landscape and the level of change should be very low. While this classification would limit changes to the landscape, it would still provide protections for tribal concerns.

The types of impacts from visual resource management under Alternative C would be similar to those under Alternative B but with slightly more lands in VRM Class II (138,308 acres, versus 71,679 acres in VRM Class I). With this increase in lands managed as VRM Class II, there would be a higher chance of sites falling into the VRM Class II area, resulting in possibly more change allowed to modify sensitive tribal landscapes.

Under Alternative D, there would be more acres managed as VRM Class I (107,636 acres) than under any other alternative (102,351 acres would be managed as VRM Class II). As described above, areas classified as VRM Class I would preserve the existing character of the landscape resulting in the highest level of protection to sensitive Native American cultural landscapes.

the Proposed Plan Alternative would manage 82,830 acres as VRM Class I and 127,169 acres as VRM Class II, resulting in impacts similar to those under Alternative B but with slightly less protection for tribal resources, because fewer acres would be managed as VRM Class I.

### ***Impacts from Management of Recreation***

The D-E NCA designation may attract more recreational use, which would have the potential for effects on tribal resources from recreation or intentional vandalism or unauthorized collection. Increased use of the internet by interested individuals to disseminate site location and encourage visitation to sites that are unrecorded or have not been allocated to public use can expose tribal resources to impacts.

Increased recreation use can affect sensitive Native American resources through direct disturbance, soil compaction, altered surface water drainage, erosion, intrusions to setting, and unauthorized collection or vandalism (Nyaupane et al. 2006; Pinter and Kwas 2005). The potential for effects on tribal resources increases when there is an increase in population, there is a change in recreation use that alters the visual or audible character of the setting, or when recreational use is concentrated in sensitive areas. The effect of repeated uses or visits over time could also increase the intensity of effects due to natural processes (such as drought). Repeated visits to sites can create social trails, directing more people to sites that may not be recorded. Increased access to more remote areas can lead to effects on undisturbed resources. Continuing

and enhancing interpretation and public education can vest the public in resource protection and respect for Native American cultural values.

There are no ERMA or SRMA allocated within the planning area in Alternative A. In areas where no RMA is designated, the BLM makes a minimal commitment to recreation (e.g., protecting cultural resources). In areas not designated as RMAs, recreation is managed to achieve other resource use objectives, including tribal interests and cultural resources. Alternative A would allow geocaching activities and recreational target shooting, which would result in possible increases in damage to sensitive tribal sites, areas or properties due to increased visitation and bullet impacts. As noted above, increased visitation could result in loss of resources by vandalism and unlawful collecting (looting); use of rock art sites as backdrops for target shooting could result in direct damage to the features and resources. These impacts are difficult to mitigate below the level of significance, but they can be greatly reduced by increasing public awareness about the cultural importance of Native American resources through education, community partnerships, and interpretive displays, and by informing the public about penalties for unlawful destruction or unlawful collection of these resources from public lands.

There would be no SRMAs allocated under Alternative B; most of the planning area is allocated to ERMA. Areas designated as ERMA are managed to protect identified recreation activities, which could result in corresponding potential for effects on tribal resources. In areas where no RMA is designated, the BLM makes a minimal commitment to recreation (e.g., protecting cultural resources) and recreation is managed to achieve other resource use objectives, including tribal interests and cultural resources. Alternative B would prohibit geocaching and target shooting, resulting in elimination of the impacts from these activities. However, under Alternative B, management would allow for permanent anchors in climbing areas with routes limited to designated routes. If a climbing area contained sensitive Native American sites and/or features, these could be damaged; however, the impact could be reduced or eliminated with tribal consultation and careful consideration for where climbing routes are designated and in anchor placement.

There would be two SRMAs allocated under Alternative C, Cactus Park/Ninemile Hill and Gunnison River; most of the planning area is undesignated. Areas designated as SRMAs increase the intensity of permitted use of these areas and the risk for direct, indirect, and inadvertent damage to Native American resources from camping, visitor use, recreation, vandalism, firewood gathering, and other activities. An increase in human presence can also intrude on settings that may be important for Native American uses. Surface restrictions (such as SSR and PSD) to preserve scenic landscape values may also provide incidental protection for cultural resources. In areas where no RMA is designated, the BLM makes a minimal commitment to recreation (e.g., protecting cultural resources) and recreation is managed to achieve other resource use objectives, including tribal interests and cultural resources. Under Alternative C, geocaching activities would require BLM authorization prior to placement, which would allow the BLM to avoid damaging impacts on sensitive tribal areas due to increased visitation and/or vandalism. Target shooting would be prohibited on 104,999 acres (approximately 50 percent) within the D-E NCA. This would eliminate impacts on tribal resources within closed areas but could result in displacement of this activity, and resulting impacts, in other areas of the D-E NCA. Alternative C would also prohibit the use of permanent anchors on climbing areas, eliminating possible damage to sensitive sites and/or features.

There would be seven SRMAs allocated under Alternative D: Cactus Park, Ninemile Hill, Escalante Canyon, Hunting Ground, Gunnison Slopes, Sawmill Mesa, Cottonwood Canyon, and

Gunnison River. The remainder of the planning area is undesignated. With an emphasis on more SRMAs, Alternative D would likely create more conflict with trying to protect sensitive tribal resources than under the other alternatives. Under Alternative D, geocaching activities would require BLM authorization prior to placement, which would allow the BLM to avoid damaging impacts on sensitive tribal areas due to increased visitation and/or vandalism. Target shooting would be prohibited on 156,942 acres (approximately 75 percent) within the D-E NCA. This would eliminate impacts on tribal resources within closed areas but could result in displacement of this activity, and resulting impacts, in other areas of the D-E NCA. Alternative D would also prohibit the use of permanent anchors on climbing areas, eliminating possible damage to sensitive sites and/or features.

There would be three SRMAs allocated under the Proposed Plan Alternative: Gunnison River, Cactus Park, and Escalante Canyon. Target shooting would be prohibited on 9,995 acres (approximately 5 percent) within the D-E NCA. This would eliminate impacts on tribal resources within these specific areas, but impacts would continue in other areas of the D-E NCA. Physical geocaches would only be allowed outside of the Wilderness and would require BLM authorization prior to placement; impacts would be the same as Alternative C in this area. Inside the Wilderness, navigational recreational activity (i.e., geocaching) would only be allowed in a virtual setting (i.e., earth caches). This would limit the placement of objects (but not the presence of people engaging in this activity) in sensitive tribal areas. Impacts from requiring climbing anchors would be the same as described under Alternative B.

### ***Impacts from Management of Scientific Use and Educational Use***

Under all alternatives, measures for interpretation, environmental education, use of heritage areas as heritage tourism sites or interpretive sites, and promotion of national, State, and BLM byways may enhance appreciation and understanding of the fragile and finite nature of Native American culture and special sites; however, it can also lead to effects from access, degradation from use, vandalism, and unauthorized collection. Therefore, resources that are not suitable for public uses are not allocated to that use category and are not included in interpretation or education projects.

### ***Impacts from Management of Livestock Grazing***

In areas open to grazing, livestock grazing is associated with ongoing effects on or near the ground surface. Trampling, rubbing on rock art sites, and grazing can affect Native American use areas and culturally important plants. Effects on Native American sites and use areas occur more frequently where livestock concentrate such as permanent and intermittent water sources or in the shade of rock shelters/caves where rock art panels may occur. These impacts would occur under all alternatives and would be greatest under Alternative D, which proposes the most acres available for grazing. Tribal consultation and cultural resources data collection methods (e.g., file searches and inventories) are conducted at the time of permit renewal with a recommendation for inventories and site evaluations in areas with a high potential for tribal resources where livestock congregate, and if conflicts exist, mitigation measures are proposed. Further, these undertakings are subject to project-level analysis and Section 106 process and tribal consultation, and protections and mitigations would be applied at project design and implementation phases.

Actions under all alternatives to protect springs and wetland riparian areas from livestock grazing would help protect water features and sources that may be culturally important to tribes.

Under Alternative A, there would continue to be 204,921 acres available for livestock grazing. The types of impacts would likely be of the nature and type described above. Areas only available

for active movement would experience fewer impacts as the cattle would be less likely to affect sites along rivers or rock shelters.

Alternative B proposes to make 188,389 acres available for livestock grazing. The type of impacts would likely be of the nature and type described above over the available areas, but over a smaller area than under Alternative A. Areas unavailable for livestock grazing (approximately 21,589 acres) would provide the greatest protection by eliminating any livestock related impacts. As no areas would be closed in Alternative A, Alternative B would be more protective of tribal resources than Alternative A. Areas only available for active movement would have the same impacts as described under Alternative A.

There would be 209,059 acres available for livestock grazing under Alternative C. The type of impacts would be of the nature and type described above over the available areas, but over a larger area than under Alternatives A and B. Areas closed to livestock grazing (918 acres) would have the same impacts as described above but provide less protection than under Alternative B due to the smaller amount of area closed. As no areas are closed in Alternative A, Alternative C would be more protective of tribal resources than Alternative A. Areas only available for active movement activities would have the same types of impacts as described in Alternative A.

There would be 209,617 acres available for livestock grazing under Alternative D. The type of impacts would be of the nature and type described above over the available areas, but they would occur over a larger area than under Alternatives A, B, or C. Areas closed to livestock grazing (361 acres) would be the least of any alternatives making Alternative D the least protective of tribal resources. Areas only available for active movement would have the same types of impacts as described in Alternative A.

The Proposed Plan Alternative would manage 206,127 acres as available for livestock grazing. Impacts would be of the nature and type described above over the available areas, but would occur over a larger area than under Alternatives A and B. Areas closed to livestock grazing (3,850 acres) would have the same types of impacts as described above. Areas only available for active movement would have the same types of impacts as described in Alternative A.

### ***Impacts from Management of Transportation and Travel***

Tribes have frequently noted in consultation the impacts from restrictions on access to their traditional cultural properties or sites in the planning area.

Under Alternatives B and C, public access to the Little Dominguez Canyon, High Park, and Leonards Basin Heritage Areas would be restricted. In addition, tribal access to the High Park Heritage Area would be improved. These actions would improve Tribes' ability to access and use important areas. Under Alternatives D and the Proposed Plan Alternative, where public access is not specifically restricted by Heritage Area management, increased access to heritage sites could increase contact by visitors who could intentionally or accidentally damage sites by collecting surface artifacts, vandalism, or illegally digging into sites. Visitors can also unintentionally damage sites by camping on or driving across sites. These impacts would occur under all alternatives, but they would be greatest under Alternative A, which proposes the most miles of routes open for public use. Reducing access by closing roads or restricting travel could thus protect heritage resources. On the other hand, decreasing access could result in restricting tribal members' access to important or significant locations or sites. Allowing authorized tribal members access to various resources by utilizing administrative roads (those closed to the general public, but travel is allowed by authorized personnel) would mitigate this impact. Continued



consultation with tribes is ongoing to identify areas that should be made available to tribal members (through administrative access or as part of an open route designation).

Besides access issues, if an action called for surface-disturbing activities (e.g., new road construction or rehabilitation of closed routes), the nature, duration, and magnitude of the impacts would be the same as those described for cultural resources.

Under Alternative A, approximately 73,900 acres would be closed to OHV use (see Glossary), whether year-round or seasonally; closure of these areas could result in restrictions upon Native American access to traditional use areas. The remaining 140,400 acres would be allocated as limited to designated routes for motorized travel with 716 miles<sup>4</sup> of routes open for motorized, mechanized and foot/horse travel and 26 miles<sup>4</sup> of routes closed to public use. Direct impacts include soil erosion and possible feathering along route edges; both impacts could increase the possibility of exposing buried cultural materials. Although closed routes could limit access to sensitive sites or traditional areas by Native American tribes, the majority of the closed routes (22 miles<sup>4</sup> or approximately 85 percent<sup>4</sup> of the closed routes) would be designated as available for administrative use, which could lessen the impacts by allowing tribes to retain access.

Alternative B would have the same type of impacts as Alternative A; however, this alternative would close 135,400 acres (acreage total includes 91,000 acres of year-round closure and 44,400 acres of seasonal closure) to motorized public use, an increase of 61,500 acres from Alternative A. The remaining 118,600 acres (This number includes the 44,400 acres of seasonal road closure areas) would be allocated as limited to designated routes. Under Alternative B, 386 miles<sup>4</sup> of routes would be open for motorized, mechanized and foot/horse travel and 356 miles<sup>4</sup> of routes closed to public use. Alternative B would have about half the number of routes designated as open to motorized use as Alternative A; the nature of these impacts would be the same as those described under the general impacts and Alternative A, but the degree of these impacts would likely be lessened. Under Alternative B, there are 14 times more routes closed to public use than under Alternative A, resulting in increased protection for resources along and at the end of these routes. Alternative B would allow administrative access on 52 more miles (74 miles<sup>4</sup>, or 21 percent of the closed routes) of closed routes than Alternative A, which could increase access to sensitive sites or traditional use areas by Native American tribes.

Alternative C would have the same type of travel management impacts as Alternative A; however, this alternative would close 127,300 acres (acreage total includes 66,300 acres of year-round closure and 61,000 acres of seasonal closures) to motorized public use, an increase of 53,400 acres from Alternative A. The remaining 143,300 acres (this number includes the 61,000 acres of seasonal road closure areas) would be allocated as limited to designated routes for motorized travel. Under Alternative C, 244 miles<sup>4</sup> of routes would be open for motorized, mechanized and foot/horse travel and 498 miles<sup>4</sup> of routes closed to public use. Alternative C would have 30 percent<sup>4</sup> of the number of routes designated as open to motorized use (including vehicles of all sizes and motorcycles, 186 miles<sup>4</sup>) as Alternative A; the nature of impacts would be the same as those described under the general impacts and Alternative A. Alternative C would also have the greatest degree of restrictions on access (498 miles<sup>4</sup> closed to public use), about 19 times more closed routes than Alternative A. Although Alternative C has the most closed routes, it also has the highest number of routes with administrative access (147 miles<sup>4</sup>, or 30 percent of the closed routes), which would lessen the degree of these impacts, although it would still be a greater limitation on access than Alternative A.

<sup>4</sup>Numbers recalculated to account for miles consistently between Proposed Plan Alternative and Draft Plan alternatives.

Alternative D would have the same type of impacts as Alternative A; however, this alternative would close 129,500 acres (acreage total includes 66,300 acres of year-round closure and 63,200 acres of seasonal closure) to motorized public use, an increase of 55,600 acres from Alternative A. This would protect approximately 75 percent more area and result in a greater likelihood for resource protection from motorized use impacts. The remaining 143,300 acres (this number includes the 63,200 acres of seasonal road closure areas) would be allocated as limited to designated routes for motorized travel. Under Alternative D, 463 miles<sup>4</sup> of routes would be open for motorized, mechanized, and foot/horse travel and 279 miles<sup>4</sup> of routes closed to public use. Alternative D would also have a higher degree of restrictions on access, with about 11 times more routes closed to public use than Alternative A, suggesting more protection from impacts although a greater degree of limited access. Approximately 21 percent of the closed routes would allow administrative access (59 miles<sup>4</sup>), which would provide less tribal access on administrative routes than under Alternative A.

Acreage allocations under the Proposed Plan Alternative would be the same as under as Alternative C; therefore, the impacts would be the same as described in Alternative C. However, under the Proposed Plan Alternative, 551 miles of routes would be open for motorized, mechanized, and foot/horse travel, and 191 miles of routes would be closed to public use. The Proposed Plan Alternative would also have a higher degree of restrictions on access, about 14 times more closed routes than Alternative A, suggesting more protection from impacts although a greater degree of limited access. Approximately 25 percent of the closed routes would allow administrative access (47 miles), which would provide less tribal access on administrative routes than under Alternative A.

### ***Impacts from Management of Land Tenure and Land Use Authorizations***

All alternatives include provisions to retain and acquire lands that contain culturally sensitive areas, to maintain access to resources, to reduce incompatible uses, and to minimize disturbance when authorizing ROWs. Land tenure adjustments and new transportation facilities that allow for better access to public lands could facilitate cultural uses but could also lead to vandalism or unauthorized collection of tribal resources. Exchange of lands to non-Federal entities would permanently remove Federal protections for any tribal sites or resources present. Exchanges and subsequent landscape changes could also result in effects on the setting of sensitive tribal landscapes.

The development and operation of transportation systems, pipelines, transmission lines, communication sites, renewable energy resources, and other land use authorizations can disturb large tracts of land containing many traditional use areas and sites, and affect the setting of viewsheds over a great distance. Defining exclusion and avoidance areas for ROWs and other realty actions reduces the potential for effects on tribal resources resulting from discretionary actions at those locations. Siting ROWs along existing corridors does not reduce the potential for effects.

Under Alternative A, approximately 91,327 acres would continue to be unsuitable for public utilities, including the Gunnison River Corridor, Cactus Park, and Dominguez Canyon areas. Any traditional use areas or tribal resources in these areas would be protected from possible surface-disturbing activities resulting from land use authorizations. However, there would be two utility corridors that could accommodate land use authorizations and have the resulting surface-disturbing activities. Any tribal resources in these areas could have impacts of the type

described above. However, prior to any permit/authorization being granted, the BLM would try to mitigate adverse impacts on sensitive tribal resources or use areas.

Under Alternative B, the entire NCA would be a ROW exclusion area, which would protect traditional use areas or tribal resources from land use authorizations and related surface-disturbing activities, as noted above.

Under Alternatives C and D, the Unaweep Canyon utility corridor (0.5-mile wide) would accommodate land use authorizations. Should a ROW grant be authorized, there could be surface-disturbing activities that could affect tribal resources; this would result in the same impacts described above. However, prior to any permit/authorization being granted, the BLM would try to mitigate any adverse impacts on sensitive resources through tribal consultation and the Section 106 process.

Alternative D would manage 118,784 acres as ROW avoidance, which would limit, but not prohibit, ROW authorizations and related surface-disturbing activities. This would result in limited protection for sensitive tribal resources in this area. The remainder of the decision area would be managed as a ROW exclusion area, resulting in impacts similar to those described under Alternative B.

Under the Proposed Plan Alternative, 208,990 acres would be managed as ROW exclusion areas with a few exceptions. The Proposed Plan Alternative also would manage 1,022 acres along Highways 50 and 141 as a ROW avoidance area that could allow for ROWs but would provide limited protection for any sensitive tribal resources.

### ***Impacts from Management of Areas of Critical Environmental Concern, National Trails and Back-County Byways, and Wild and Scenic Rivers***

Special designation areas are afforded special management measures designed to protect a variety of resource values, including geologic, botanic, historic, cultural, scenic, fish and wildlife resources, and rare or exemplary natural systems. Protections afforded by the management measures for these special designations would provide additional, indirect protections for tribal resources. Management measures include surface use and ground disturbance restrictions, prohibitions on motorized uses, VRM classifications, and other restrictions on incompatible activities. Designation may help preserve and enhance important Native American natural resources, but in some instances restrictions could impede Native American access and uses. Designations may attract more recreational use and the potential for inadvertent effects on traditional use areas or other tribal resources. Increased use of the internet by interested individuals to disseminate site location and encourage visitation to sites that are unrecorded can expose tribal use areas and resources to impacts.

Under Alternative A, the Gunnison Gravels and Escalante Canyon are designated as ACECs, with protections such as prohibiting surface occupancy, closing the areas to mineral materials sales or free use permits, and excluding the areas from utility ROWs. All of these measures would protect any sensitive tribal resources within the ACEC.

Under Alternative B, no ACECs would be designated, so there would be no incidental protections from ACEC management.

Under Alternative C, the **River Rims** area would be designated an ACEC to protect unique and sensitive paleontological resources; as noted above, protection of other sensitive resources generally has a protective effect on tribal resources.

Alternative D would designate the Gunnison Gravels and Escalante Canyon ACECs; impacts would be the same as under Alternative A but would be confined to the Gunnison Gravels ACEC area.

The Proposed Plan Alternative would designate the Gunnison Gravels ACEC, which would provide protection from surface-disturbing activities for any tribal resources found within the area. This alternative would also designate Escalante Canyon ACEC with about 20 percent more area protected than Alternative A. The protections would be the same as described above, although to a larger degree than Alternative A. Additionally, grazing would be managed to protect plan resources indicating that some tribally important plants may benefit by not being trampled or eaten by cattle grazing in the area. The Proposed Plan Alternative would also designate the **River Rims** ACEC and have the same types and degree of impacts as Alternative C. However, under the Proposed Plan Alternative, the area would prohibit competitive recreation permits and limit commercial permits to low impact, further protecting any tribal resources in the area.

Management objectives and actions for the NHT could have impacts on tribal resources of the types described in the Direct and Indirect Impacts section, including introducing more visitors into the NHT landscape and introducing more visual or aural intrusions. Alternative A has no similar management suggesting the baseline impacts would be those described above and be largely unmonitored and unrestricted. Alternatives B, C and the Proposed Plan Alternative would all be similar as they have the same management actions. Under these alternatives the NHT corridor would be managed to 200 meters wide and primarily focused on auto-touring on the highway. The narrow trail corridor and keeping the focus on highway auto-touring would likely reduce the possibility for the types of impacts noted above. Alternative D, with its wider trail management corridor and emphasis on retracement opportunities could increase the impacts by encouraging more people to follow the trail across the landscape (rather than drive the highway auto-tour), introducing more intrusions and visitors.

Scenic values are also different between alternatives; Alternatives B, C and the Proposed Plan Alternative propose management as VRM Class II whereas Alternative D proposes management as VRM Class I. Impacts would be the same as those described under Impacts from Management of Scenic Values. Alternative D's emphasis on a higher VRM Class would limit the amount of intrusions onto the trail landscape, which could indirectly preserve the landscape, sites, and setting for tribal resources.

Impacts from WSR management would be similar in nature and type to those described for national historic trails and recreation. The differences between alternatives would be a result of different **tentative** classifications and which stream segments would be allocated as suitable. In general, segments classified as Wild or Scenic would be afforded more protections (e.g., no surface-disturbing activities such as interpretive sites and recreational facilities) to tribal resources than sections classified as Recreational. Segments that are found to be unsuitable would be released from WSR interim protective management, reverting to management actions prescribed under resources and uses for each alternative.

Alternative A would manage all segments as eligible, including managing Gunnison River Segment 3 and Escalante Creek Segment 2 under a Recreational **tentative** classification. Alternative C would allocate all segments as suitable, including the same two segments for

Recreational **tentative** classification as Alternative A. Both Alternatives A and C would have the same impacts from recreational developments in these segments. Additionally, Alternatives A and C would have all the segments managed under WSR protective management resulting in increased protection for tribal resources in the Wild and Scenic classifications. Alternative B would determine that none of the segments were suitable for classification except Gunnison River Segments 1 and 2 and Cottonwood Creek. Of these segments, the Gunnison River Segment 3 would be classified as Recreational and could have a higher probability for impacts on tribal resources found along River from development of recreational facilities. Alternative D would provide no protections from WSR management, as all of the segments would be released; the segments would revert to the management prescriptions found under the other resources and uses with the resultant impacts (see sections noted above). The Proposed Plan Alternative would be nearly identical to Alternative D except it would manage Cottonwood Creek **as suitable for inclusion in the NWSRS** under a Wild **tentative** classification, providing the WSR protections to tribal resources along this segment.

## Summary of Impacts from Alternatives

Alternative A would continue to limit protection of cultural resources to enforcement of Federal law and BLM policy. Continued consultation and cooperation with Native American tribes would allow continued compilation of information on traditional cultural properties, sacred sites, and cultural landscapes allowing better future management and protections of these sensitive areas from adverse impacts.

Under Alternative B, protections of cultural resources and some vegetation communities (which can have special significance in Native American cultures) would provide protections to traditional use areas and tribal sensitive sites from adverse impacts (similar actions would occur under Alternatives C, D, and the Proposed Plan Alternative). Continued consultation and cooperation with Native American tribes would allow continued compilation of information on traditional cultural properties, sacred sites, and cultural landscapes allowing better future management and protections of these sensitive areas. Alternative B would prohibit collection of plant materials except for use by Native American tribal members. This would continue to allow access into those traditional use areas for resource collection and eliminate competition from commercial plant collectors that may target the same resources.

Impacts under Alternative C would be nearly the same as under Alternative B, but more active management would increase the possibility of change on the landscape that could modify and beneficially impact sensitive tribal resources.

Under Alternative D, the planning area has more areas in VRM Class I than any other alternative, resulting in the highest level of protection to sensitive Native American cultural landscapes from adverse impacts. With the emphasis on managing more SRMAs, there would likely be more conflict between recreation and protecting sensitive tribal resources than under other alternatives. Also, the alternative would allow for recreational target shooting, which would have the same impacts as those described under Alternative A. However, specific areas within the D-E NCA are noted as prohibiting target shooting; any sensitive Native American resources/sites in these areas would be protected from possible shooting related damage.

The Proposed Plan Alternative would prohibit target shooting in the **three** SRMAs; any tribal resources in these areas would be protected from possible shooting related damage. Impacts from VRM allocations would be similar to those of the other action alternatives.

## Cumulative Impacts

The types of effects on tribal resources that have occurred in the past include destruction of the cultural sites, destruction or damage to traditional cultural properties, loss of integrity to these areas due to physical or other disturbances, loss of setting, degradation from natural processes such as fire, incremental disturbance from use or access, and effects from vandalism and unauthorized collection. Loss of access to Traditional Cultural Properties has not been specifically identified through consultation but is possible.

Current and future trends in the D-E NCA include ongoing grazing, increase in recreational demand, invasive species, erosion, wildfire, forest disease and insects, drought, and climate change. These would continue to affect heritage resources and landscapes through loss or disturbance of resources that are not or cannot be protected, changes in setting, pressure from incremental use, loss of access for Native Americans to resources, and theft or vandalism of cultural resources.

Actions related to recreation, grazing, vegetation treatment, and wildfire have had past effects and are expected to continue to affect heritage resources. Increased frequency of wildfire due to drought, climate change, and forest health may lead to additional direct loss of heritage and subsistence resources

For actions that could affect cultural resources on Federal land or actions that are funded, licensed, or permitted by the Federal Government, government-to-government consultation is required. Consideration of the effects of undertakings on tribal heritage resources would be required, and the BLM would attempt to resolve all or most of the adverse effects. Agency actions using Federal funds or needing a Federal permit require tribal consultation. Effects would be avoided or mitigated in many of the regional actions. Some effects would be unavoidable. Measures are in place to identify threats to resources and to prioritize management actions, but some effects on known or unknown Native American resources resulting from activities such as natural processes, wildfire, grazing, dispersed recreation, recreational use, and vandalism can go unnoticed and may not be mitigated. Mitigation could preclude other desirable management options and future uses. Development or actions on lands that are not protected by Federal or other cultural resource statutes and regulatory protections could lead to loss of these resources and the regional heritage and knowledge that they contain.

Decisions from this RMP would have effects that, when combined with other past, present, and reasonably foreseeable actions, could produce cumulative effects on religious, traditional, or other sensitive Native American resources. Cumulative effects would result from the destruction and loss of known and unrecorded resources and unanticipated discoveries. The continued documentation of tribal heritage resources from consultation and the ethnohistory report has resulted in additional information to expand and explain the area's Native American history.

### 4.6.2. Public Safety

This section discusses impacts on public safety from proposed management actions of other resources and resource uses. Existing conditions concerning public safety are described in section 3.5.2, Public Safety.

## Methods of Analysis

Safety hazards occurring on public lands typically include the presence of hazardous materials, including the potential for contamination of air or water; abandoned mine lands; and naturally occurring hazards.

The BLM is responsible for maintaining facilities and infrastructure, reducing health and safety risks to employees and the public, and protecting public lands from illegal dumping of wastes, theft, destruction of public property, and misuse of resources. Where hazards are known and exposure of the public to these risks can be minimized or prevented, land use planning decisions can proactively aid in the protection of public health and safety.

### *Indicators*

- The presence of, or accessibility to, hazards resulting from management actions proposed in Chapter 2.

Adverse impacts would result from management actions that increase the presence or accessibility of hazards. Beneficial impacts would result from management actions that decrease the presence or accessibility of hazards.

### *Assumptions*

The analysis includes the following assumptions:

- Public safety issues would receive priority consideration in the management of public lands.
- Demand for safe visits would increase with increasing numbers of public land users.
- Activities and resources available in and around the planning area would continue to be important to the health and safety of current and future residents.
- Most abandoned mine sites in the planning area are identified and characterized.
- The BLM would set as its highest abandoned mines physical safety action priority the cleaning up of those abandoned mine sites situated at locations: (a) where a death or injury has occurred and the site has not already been addressed; or (b) situated on or in immediate with high visitor use (IM 2000-182, *Mitigating and Remediating Physical Safety Hazards at Abandoned Mine Land Sites*);
- All new hazardous materials and waste sites are identified and characterized.
- Resource development activities identify any possible generation of hazardous waste.
- No substantial new hazardous materials uses and (or) waste generating occurs within the planning area.
- The BLM's Hazard Management and Resource Restoration Program would respond to all hazardous material releases on public surface. Emergency cleanup actions would be implemented on sites posing a substantial threat to the public and (or) the environment.

Implementing management for the following resources would have negligible or no impact on public safety and are therefore not discussed in detail: geological and paleontological resources,

priority species and vegetation, noxious and invasive weeds, special status species, fish and wildlife, cultural resources, forestry, wilderness, lands with wilderness characteristics, science, education, land tenure and land use authorization, national trails, ACECs, WSRs, and WSAs, and watchable wildlife areas.

## **Direct and Indirect Impacts**

Direct impacts on public safety are considered to be those that increase or decrease risk. Indirect impacts are considered to be those that increase or decrease exposure to risk.

### ***Impacts from Management of Fire and Fuels***

Fuel treatments, including prescribed fire and mechanical treatment, would improve public safety by reducing fire hazard. Many of these fuel treatments occur in locations to reduce the chance of a wildfire burning from BLM-administered lands onto adjacent private lands (i.e., wildland-urban interface zones). Fuel treatments reduce the intensity of fire should wildfire occur, increasing the potential of success of fire suppression operations. Treatments to reduce hazardous fuels also help protect other public land users that could become trapped, injured, or even killed during a wildfire event.

Degree of treatment of fuels to manage wildfire varies by alternative, but public safety would be a priority under all alternatives. Under Alternative B, treatment would be limited to allow natural fire effects to the maximum extent, there may be some limited increased risk of wildfires and associated indirect risks to public property and safety in the planning area and adjacent communities. Under all other alternatives, fire and fuel treatments would be conducted to reduce future risk of wildfire to protect resource objectives.

### ***Impacts from Management of Soils and Water Quality***

Surface waters can be indirectly impacted over the long term from development activities in the same watershed and from livestock grazing, which can introduce both chemical and biological (e.g., fecal coliform, nitrogen) contamination into waters. Contaminated surface waters pose health risks to recreational users who may come into contact with those waters. Development activities in the vicinity of drinking water aquifers (groundwater) pose a risk of contamination of those aquifers and health impacts on consumers of the groundwater.

Under Alternative A, BLM management actions would be prohibited from degrading water quality in currently impaired segments (303d-listed); therefore the impacts on water supplies from public land activities are likely to be minimal.

Under all action alternatives, management actions would promote de-listing of impaired stream segments and maintain water quality on segments meeting State water quality standards, thereby maintaining or improving supplies of water for human use. Prohibition of surface-disturbing activities around fragile soil, steep slopes and ephemeral streams would further reduce risk of water contamination. Restrictions and related reduction in risk of contamination would be greatest in Alternatives B, but all action alternatives would provide protection.

### ***Impacts from Management of Recreation***

Risks to public safety include potential for injury from use of public lands. In general, risks to public health and safety are elevated with increased intensity of use and public accessibility.



Prohibiting recreational target shooting in certain areas improves public safety by limiting the risk of the public being injured or killed by stray ammunition. Ammunition fired from a 7.62 or .30 caliber firearm, North America's most common rifle caliber, can travel a maximum of 4,100 meters along gun target line (Department of the Army 2012). Ricochet area width, which is the area width where uncontrolled projectiles can place the public in harm, is equal to 861 meters for this same rifle caliber (Department of the Army 2012). The beneficial impact from the closures proposed in Chapter 2 would be particularly pronounced in areas where recreational target shooting closures overlap areas of concentrated and confined (for example, within a narrow canyon) recreational use, and in areas where public lands abut private lands with residences. Stray bullets from target shooting in these areas could lead to damage to private property and safety concerns for area residents, recreationists, and other visitors. Within the D-E NCA, areas with concentrated and confined recreation use are East Creek (Unaweep Canyon), lower Big and Little Dominguez Canyons, the Gunnison River, and Escalante Canyon. Areas where public lands abut private lands with residences include Escalante Canyon, the Gunnison River, East Creek (Unaweep Canyon), and the northern (Mesa County) end of the Hunting Ground.

Under Alternative A, current recreational use would continue, and impacts on public health and safety would occur as a result of visitor use, as described above. Recreational target shooting is allowed throughout the D-E NCA with the exception of three developed recreation sites. Therefore, the potential for safety risks from shooting is present, particularly in areas with concentrated and confined recreation use (along the Gunnison River, Escalante Canyon, lower Big Dominguez Canyon, and East Creek) and areas where recreational target shooting closures overlap areas where public lands abut private lands with residences (the Gunnison River, Escalante Canyon, East Creek (Unaweep Canyon), and the northern end of the Hunting Ground).

Under Alternative B, the emphasis in the D-E NCA would be on protection of resources, and visitor access and type of use would be restricted relative to Alternative A, reducing the potential risk for visitors due to recreational activities. In addition, the maximum level of protection from firearm accidents would be provided due to a ban on recreational target shooting throughout the D-E NCA (note that restrictions on recreational target shooting do not apply to hunting).

Under Alternative C, recreation in much of the D-E NCA would not be managed as RMAs, and may occur in a more dispersed nature. As a result, impacts due to conflict between recreational users may be decreased, but risk from accidents and other safety concerns would still be present. Under Alternative C, the BLM would close the Gunnison River, Dominguez Canyon Wilderness, and Cactus Park to recreational target shooting (104,999 acres, or 50 percent of the D-E NCA). These closures may drive this activity to other parts of the D-E NCA, where public safety risks from this activity would still occur. Lands would still be available for recreational target shooting within East Creek and Escalante Canyon, two areas with concentrated and confined recreational use. Of the lands where recreational target shooting closures overlap areas where public lands abut private lands with residences, the northern end of the Hunting Ground, Escalante Canyon, and East Creek would still be available for recreational target shooting. Requirements for sufficient backstops would provide some level of protection to both people and resources.

Under Alternative D, recreation is emphasized in the project area, increasing the risk for public health and safety as access and visitor use numbers are likely to increase, particularly within the nine areas managed as SRMAs. In particular, increased visitor traffic due to SRMA and watchable wildlife area designation is a concern in Escalante Canyon, due to the narrow county-maintained road accessing this area. The BLM would work with Delta County to address traffic and visitor safety issues, thereby decreasing the risk. In addition, recreational target shooting is prohibited

in the following recreation areas: Hunting Ground, Gunnison River, Cactus Park, Ninemile Hill, Gunnison Slopes, East Creek, Sawmill Mesa, Escalante Canyon, Cottonwood Canyon, and Dominguez Canyon Wilderness (156,942 acres, or approximately 75 percent of the D-E NCA). These closures would drive this activity away from areas with concentrated and confined recreation use, thus reducing risks to visitor safety. All of the areas where public lands abut private lands with residences would also be closed to recreational target shooting, which would improve public safety in the D-E NCA. Guidelines for backstop use would apply as described for Alternative C.

Under the Proposed Plan Alternative, as in Alternative D, recreation would be emphasized in the project area and geared toward a variety of outcomes. There is potential for safety risks to visitors from conflicts between recreational users and in accidents, likely to be concentrated within the five areas managed as SRMAs. Increased traffic in Escalante Canyon would have the same impacts as discussed under Alternative D. Under this Alternative, recreational target shooting would be prohibited in the following areas: Dominguez Canyon Wilderness Zone 1, Gunnison River SRMA, Escalante Canyon SRMA, and East Creek ERMA (9,995 acres, or approximately 5 percent of the D-E NCA). These closures would drive this activity away from areas with concentrated and confined recreational use, thus reducing risks to visitor safety. Of the lands where recreational target shooting closures overlap areas where public lands abut private lands with residences, the northern end of the Hunting Ground would still be available for recreational target shooting. This could result in some risk to public safety in this portion of the D-E NCA. Guidelines for backstop use would apply as described for Alternative C.

### ***Impacts from Management of Livestock Grazing***

Livestock grazing can introduce the potential for human injury, particularly when livestock grazing occurs in the same area as recreational use (e.g., collisions with cattle on trails) or where guard animals used for sheep grazing interact with the public. The potential for long-term, indirect impacts are considered to be in direct proportion to the acreages that are open for livestock grazing under each alternative, and therefore, the level of risk varies by alternative along with these acreages.

Under Alternative A, grazing and recreation would occur as discussed under current conditions; approximately 204,921 acres would be available for grazing. The potential for conflicts between recreational users and livestock would be present as discussed above.

Under Alternative B, livestock grazing would be restricted relative to grazing under Alternative A (188,389 acres would be available for grazing), reducing the potential safety risks between humans and livestock. In addition, recreation access would be limited when conflicts between recreation and livestock occur, further reducing potential for safety risk.

Under Alternative C, the acreage open to livestock grazing would be similar to that for Alternative A (209,059 acres), resulting in similar impacts that would occur over a smaller area. For areas with a high concentration of recreational use, management would be examined to ensure that conflicts between grazing and recreation were reduced.

Managing the most acres as open to livestock grazing under Alternative D (209,617 acres) would result in the highest risk of conflict between recreationists and guard animals. Mitigation measures for bighorn sheep include required use of guard animals with domestic sheep. This is also the most recreation-focused alternative with overlap between SRMAs and domestic sheep grazing allotments. Therefore, conflicts would likely increase.

Under the Proposed Plan Alternative, approximately 206,127 acres would be available for grazing, and impacts would be similar to those described under Alternative A. As under Alternative D, mitigation measures for bighorn sheep include required use of guard animals with domestic sheep, which would increase the potential for conflict with recreationists. Conflicts between recreation and grazing would be dealt with on a case-by-case basis, ensuring their resolution but potentially in a less proactive manner than under Alternatives C and D.

### ***Impacts from Management of Transportation and Travel***

The risk of vehicle collisions is expected to rise in proportion to the miles of routes and acres of land where use is allowed. Greater levels of vehicle activity could result in a greater potential for vehicle collisions, resulting in long-term, direct impacts on safety.

Under Alternative A approximately 69,000 acres of the planning area would remain closed to motorized and mechanized travel; the potential for accidents from recreational use would be present as described above.

Under Alternative B, the acreage available for motorized and mechanized travel would be the most heavily reduced relative to conditions under Alternative A (approximately 91,000 acres closed to mechanized and motorized use), reducing the risk of accidents with recreational vehicles in the planning area. The ability of emergency responders to reach visitors or for fire response vehicles to respond to wildfires could be hampered by reducing motorized access. Exceptions for emergency and administrative access would decrease this impact to some extent.

Under Alternatives C, D, and the Proposed Plan Alternative, approximately 66,000 acres would be closed to motorized and mechanized use, resulting in impacts similar to those under Alternative A.

### ***Impacts from Management of Watchable Wildlife Areas***

Designation of watchable wildlife areas may increase visitation. With increased visitation, exposure to risk and the costs of public safety management would increase. Under Alternatives A, B, and C, no watchable wildlife areas would be designated, so no increase in risk would occur. Under Alternatives D and the Proposed Plan Alternative, designating 11,202 acres of Escalante Canyon as a watchable wildlife area could result in impacts as described above.

## **Summary of Impacts from Alternatives**

Overall, adverse impacts under Alternative A would increase over time as the planning area receives more visitation. Primary drivers of risks to public safety would include wildfire, potential contamination of water supplies, risk of injury from recreational activities, and in particular, recreational firearm use. Additional risks would be present from conflicts between recreational users and livestock grazing.

Under Alternative B, adverse impacts on public health and safety would generally be reduced due to the focus on resource protection and related limitations on access and activities. Risk of contamination of water and soils would be reduced due to surface use restrictions. In addition, travel- and recreation-based risks would be decreased relative to those under Alternative A due to lack of recreation emphasis areas, and importantly, a ban on recreational firearm use. Risk of conflict between the recreating public and livestock would similarly be reduced.

Under Alternative C, some restrictions on activities would reduce adverse impacts relative to current conditions; surface disturbance limitations would protect public water supplies above levels in Alternative A but below those under Alternative B. Risks to public safety from recreation activities, including target shooting, would be similar to that described in Alternative A due to the lack of areas specifically managed for recreational experiences and benefits. Closure of routes to the public would be the highest under this alternative; therefore, the risk of injury from motorized or mechanized use may be slightly reduced when compared with other alternatives.

Under Alternative D, restrictions on activities near streams and sensitive soils would reduce risks for contamination of water as described under Alternative C. Emphasis on recreation in the nine SRMAs in the planning area would increase visitor traffic and the potential for accidents and injuries. Increased visitor use could also increase road traffic in Escalante Canyon, thereby increasing safety concerns on the narrow county access road. Target shooting would be limited at high concentration recreation areas, reducing the risk of accidental shooting in these locations. Mitigation measures for bighorn sheep include required use of guard animals with domestic sheep, which would increase the potential for conflict with recreationists.

Under the Proposed Plan Alternative, restrictions on activities near streams and sensitive soils would reduce risks for contamination of water as described in Alternatives C and D. As under Alternative D, increased recreational visitor use would lead to increased risk of accidents, particularly in the three designated SRMAs. This would be due to the increased road traffic on the Escalante Canyon access road. Target shooting would be limited at high concentration recreation areas, reducing the risk of accidental shooting in these locations.

## Cumulative Impacts

The CIAA for public safety includes the D-E NCA, Uncompahgre Field Office, Grand Junction Field Office; and the Grand Valley, Ouray and Norwood Ranger Districts of the Grand Mesa, Uncompahgre and Gunnison National Forest; as well as all private, State and county lands within those boundaries. Past and present actions that have affected public health and safety include illegal dumping of hazardous waste, dispersed or unmanaged target shooting, vehicle collisions, visitors finding themselves unprepared for remote settings. Over the lifespan of the RMP, these actions and risks are expected to continue to grow in proportion to the increasing population of the CIAA and increasing use of BLM-administered lands by a regional and national audience. A larger population may result in more people dumping trash and hazardous wastes, a greater risk of vehicle collisions, and a greater strain on law enforcement.

### 4.6.3. Social and Economic Conditions

This section presents an analysis of social and economic impacts of the management alternatives proposed in the Draft RMP. This section discusses employment, labor income, and effects on sectors in the three-county analysis area economy that encompass the D-E NCA (Mesa, Delta, and Montrose Counties). Impacts on revenues received by States and counties, environmental justice, and communities within the three-county analysis area are also presented. Finally, the alternatives are discussed in light of forecasts for the area over the 20-year period of analysis.

The economic analysis focuses on changes in labor income and employment associated with BLM planning actions and estimated outputs from the alternatives (Table 4.67). The social analysis focuses on the interests and concerns of identified communities relative to the alternatives.

Although impacts associated with economic activity are easier to assess, management actions under the alternatives may be impacts that are not easily measured or tied to economic activity. Examples of where effects are difficult to quantify are equity effects, impacts on social values, and non-market values. Regardless, these impacts are discussed despite the inability to measure them quantitatively.

**Table 4.67. Average Annual BLM Outputs by Alternative**

Output	Alt A (No Action) <sup>2</sup>	Alt B	Alt C	Alt D	Proposed Plan Alt
Non-local Recreation (Visitor Days) <sup>1</sup>	77,357	77,357	77,303	77,863	77,678
Local Recreation (Visitor Days) <sup>2</sup>	62,384	62,384	62,340	62,793	62,645
Grazing (AUMs)	14,403	10,034	14,185	14,416	14,349
Payments to Counties <sup>3</sup>	\$211,765	\$211,765	\$210,945	\$211,724	\$211,767
BLM Expenditures	\$537,000	\$537,000	\$537,000	\$537,000	\$537,000
Externally Funded Management	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000
<sup>1</sup> Data collected by Colorado Mesa University provided shares of total visitation allocated to these six trip type segments. This process indicated approximately 55 percent of all visits to the D-E NCA were non-local visitors (from a zip code at least 50 miles from the D-E NCA), and 45 percent were local visitors <sup>2</sup> Recreation on the DE-NCA is anticipated to increase over the next 15–20 years based on population projections for the three-county analysis area. Under this assumption, visitor use under the No Action Alternative is anticipated to increase by 2 percent annually over the planning period (see assumptions below). <sup>3</sup> This includes PILT payments and revenue sharing payments from the Federal Government.					

The social analysis focuses on changes to social and economic well-being as it relates to the quality of life of communities identified in Chapter 3. While many of the potential changes in quality of life can only be discussed qualitatively, outputs in Table 4.67 provide an approach to discuss the magnitude of effects on these communities. Scoping comments from the RMP planning process provided specific information pertaining to the concerns of individuals and groups affected by this plan. All comments were examined and general categories were formed from common themes pertaining to community connections and interests in D-E NCA management. The four communities of interest identified include individuals and groups interested in recreation opportunities, grazing as a land use of traditional and cultural importance, edu-tourism opportunities, and natural amenities and migration.

## Methods of Analysis

In order to accurately portray the relationship of NCA management and the community, the social and economic geographic scope of analysis must be defined. As discussed in Chapter 3, the social and economic effects from changes on BLM lands extend beyond the immediate vicinity of their location in the D-E NCA. Consequently, effects on social and economic conditions are presented for the three-county area surrounding the D-E NCA: Mesa, Delta and Montrose Counties.

The sub sections below include effects that pertain to social and economic components of resource areas identified in Chapter 2 of this document. For example, scenic values and special designations (such as ACECs) are addressed in the subsection below entitled Role of Amenities, Amenity Migration and Non-market Values. The recreation and transportation and travel

management consequences are considered in the subsection entitled “Recreation and Access.” Effects from education management are addressed in the subsection, “Individuals and Groups Interested in Edu-tourism,” below. Effects from forest and woodland products are addressed in the environmental justice subsection below. Social and economic effects were not explicitly articulated for management specific to resource sections on geology and paleontology, priority species and vegetation, special status species and natural communities, non-special status fish and wildlife, noxious and invasive weeds, fire and fuels, soils and water quality, cultural resources, air resources, and science. However, indirect effects of management under these resources are considered and included throughout other sections. For example, effects from management relating to resource protection such as priority species and vegetation, special status species and natural communities, non-special status fish and wildlife, noxious and invasive weeds, fire and fuels, soils and water quality, cultural resources, and air resources are considered in the subsection titled “Role of Amenities, Amenity Migration, and Non-market Values.”

Employment and labor income estimates developed for this analysis include direct, indirect, and induced economic effects measured using IMPLAN. Direct employment would, for example, be generated in the grazing sector. Additional employment would be generated as the affected livestock operators purchase services and materials as inputs (“indirect” effects) and ranchers spend their earnings within the local economy (“induced” effects). Direct, indirect, and induced effects are combined in the discussion of effects below.

Theoretically, expenditures associated with changes in final demand would be available and specific enough to allocate to each of the 440 sectors contained in the IMPLAN model. In the absence of primary data, national-level production functions are used. Expenditures should be delineated between local and non-local providers, as purchases out of the economic study region would have no local economic impact. IMPLAN’s data contain information that describes the proportion of a given commodity that would be provided by local producers. Previous modeling experience has shown that the data contained in the IMPLAN modeling system for the various sectors are an accurate representation of impacts.

The social analysis assesses the potential effects of different management actions on potentially affected social groups. These groups were identified on the basis of the results of public scoping and comments received during the planning process. This analysis addresses the potential impacts of the alternatives on the basis of the issues and concerns raised by these groups. The analysis draws upon ongoing discussions between the BLM and potentially affected publics, as well as discussions with subject matter experts involved in other parts of the analysis. The analysis is primarily qualitative with quantitative measures used as appropriate.

The social groups are defined to facilitate the discussion of social impacts. These discussions simplify what are often quite complex and unique values and attitudes, and the groupings presented here are by no means mutually exclusive. For example, ranchers may participate in recreation activities. It is also worth noting that attitudes, interests, and values often change over time. The social analysis covers the groups and individuals that are most likely to be affected by this plan.

The following assumptions were used to complete the analysis for the social and economic impacts from the proposed management decisions:

### ***Assumptions***

Assumptions used in this impact analysis include the following:

- Regional economic impacts are estimated on the basis of the assumption of full implementation of each alternative. The actual changes in the economy would depend on individuals taking advantage of the resource-related opportunities that would be supported by each alternative. If market conditions or trends in resource use were not conducive to developing some opportunities, the impact on the economy would be different than estimated here.
- Resource specialists projected annual resource outputs that are based on the best available information and professional judgment. The purpose of the economic analysis is to compare the relative impacts of the alternatives and should not be viewed as absolute economic values.
- Projected recreational visits are distributed among different types of visitors on the basis of data collected by Natural Resource and Land Policy Institute (CMU 2011).
- The ratios of recreational visits to jobs and income that are used to assess the impacts of the alternatives are based on national ratios developed through the USFS's National Visitor Use Monitoring program (NVUM) (Stynes and White 2005).
- Baseline recreational demand is assumed to increase by 2 percent per year, based on the State Demography Office's population projections for the three-county analysis area (personal communication with Ryan Swygman, CPW, 2012) described in the Cumulative Effects on Social and Economic Conditions section of Chapter 4.
- Local recreational opportunities were identified as unique, but those supported by BLM land within the D-E NCA were not considered different from those provided by other public lands in the analysis area. If recreation opportunities were restricted within the D-E NCA recreationists would more than likely substitute toward other existing local recreation opportunities rather than traveling outside the three-county area to recreate.
- Livestock grazing revenues received by the BLM were calculated using the conservative AUM price for 2011 of \$1.35 per AUM and the 2009 statewide average AUM price for private land of \$14.70, adjusted to 2012 dollars (USDA 2009a).
- Since information specific to the D-E NCA is unavailable for externally funded management, salary, and non-salary-related expenditures, these expense are assumed to match data for the McInnis Canyons NCA, as both NCAs are managed out of the GJFO and within close proximity to each other.
- Non-salary-related expenditures made by the D-E NCA are allocated to different economic sectors on the basis of data compiled for the Grand Mesa, Uncompahgre, and Gunnison National Forests. Since the southwest side of the NCA borders the Uncompahgre National Forest, it is assumed that spending profiles to manage these adjacent lands would be very similar.
- While the BLM would continue to manage D-E NCA through visual resource management under each alternative, greater emphasis would be placed on retaining and preserving the existing character of the D-E NCA's landscape under the action alternatives. These alternatives would minimize changes to the characteristic of D-E NCA's landscape and protect the natural and cultural integrity of its resources through special land designations, such as ACECs, heritage areas, and wild and scenic river suitability. These designations would further maintain

and perhaps enhance non-market values associated with natural amenities protected on these lands.

### ***Indicators***

This analysis used a wide range of indicators to measure the impacts of each proposed alternative. Social indicators used in this study include the following:

- Annual number of local and non-local D-E NCA visitors
- Acres designated as ERMAs
- Acres designated as SRMAs
- Allocated AUMs
- Areas allocated for education and interpretive use
- Acres under VRM Class I, II, and III
- Acres designated as ACECs
- Acres managed for wilderness characteristics
- Acres managed as suitable for wild and scenic river designation
- Acres designated as watchable wildlife areas
- Acres designated for motorized travel limited to designated routes

In addition to social indicators, this analysis included two indicators to measure changes in economic activity within the three-county region resulting from the management actions proposed under each alternative. These economic indicators included the following:

- Labor income (wage, salary and proprietors income) adjusted to 2012 U.S. dollars
- Annual average employment

### **Note**

The job estimates provided in this Proposed RMP are not full-time equivalents and include all full-time, part-time, and temporary positions supported by D-E NCA resource management actions. Thus, 1 job lasting 12 months = 2 jobs lasting 6 months each = 3 jobs lasting 4 months.



## Direct and Indirect Impacts

### Economic

None of these alternatives are expected to reduce economic diversity (the number of economic sectors) or increase economic dependency, which occurs when the local economy is dominated by a limited number of industries, within the three-county analysis area. Shifts in emphasis could occur, but these would not result as a consequence of planning actions under these alternatives. While the action and No Action alternatives have the potential to affect local businesses and individuals, the relative contribution of BLM-related activities to the local economy and the relative differences between these alternatives are not meaningful enough to have any measurable effect on economic diversity or dependency.

For example, the dependency of the local economy on the livestock industry and recreation activities would not be affected by NCA management under these alternatives. While BLM-related contributions, i.e., jobs and labor income, would continue to support less than 1 percent of totals within the three-county analysis area economy under each alternative, these contributions could be more important for smaller communities within the three-county analysis area.

Estimates of the levels of employment and labor income that would be supported under each alternative are based on projected resource outputs from D-E NCA management actions, estimated payments to counties, BLM expenditures, and other externally funded activities on BLM lands (Table 4.67). The projected outputs and activities are discussed for BLM resource areas in the following sections. Estimated average annual employment and labor income from outputs and activities are summarized in Tables 4.68 and 4.69 below, respectively. Estimates included in these tables are totals and include the direct, indirect, and induced jobs and labor income supported by the BLM management activities outlined under each alternative. A more detailed discussion of the methodology used to estimate these impacts can be found in Appendix S.

**Table 4.68. Average Annual Employment by Program by Alternative (Full and Part-Time Jobs)**

Resource Program	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Non-Local Recreation	46	46	46	46	46
Local Recreation	23	23	23	23	23
Grazing	32	22	31	32	32
Payments to Counties	0	0	0	0	0
BLM Expenditures	11	11	11	11	11
Externally Funded Management	5	5	5	5	5
<b>Total D-E NCA Management</b>	<b>118</b>	<b>107</b>	<b>117</b>	<b>118</b>	<b>118</b>
<p>Note 1: Data collected by Colorado Mesa University provide shares of total visitation allocated to these six trip type segments. This process indicated approximately 55 percent of all visits to the D-E NCA were non-local visitors (from a zip code at least 30 miles from the D-E NCA), and 45 percent were local visitors.</p> <p>Note 2: Average annual values are based on projected impacts over the 20-year analysis period. Source: Potential employment and labor income impacts are based on the estimated resource outputs summarized by alternative in Table 4.67. Potential impacts were estimated using the IMPLAN model described previously.</p>					

**Table 4.69. Average Annual Labor Income by Program by Alternative (in Thousands of 2012 Dollars)**

Resource Program	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Non-Local Recreation	\$1,322	\$1,322	\$1,321	\$1,331	\$1,328
Local Recreation	\$783	\$783	\$782	\$788	\$786
Grazing	\$583	\$393	\$574	\$583	\$580
Payments to Counties	\$2	\$2	\$2	\$2	\$2
BLM Expenditures	\$563	\$563	\$563	\$563	\$563
Externally Funded Management	\$142	\$142	\$142	\$142	\$142
<b>Total D-E NCA Management</b>	<b>\$3,395</b>	<b>\$3,205</b>	<b>\$3,384</b>	<b>\$3,409</b>	<b>\$3,401</b>

Employment and labor income contributions of BLM managed lands within D-E NCA were greater under Alternative D than under any other alternative. The management activities proposed under Alternative D were shown to support approximately 118 jobs and generate \$3.4 million in labor income in the three-county analysis area economy on an average annual basis (Tables 4.68 and 4.69). The higher anticipated contributions resulting from Alternative D stem from its commitment to trail-based recreation, which would support a greater number of recreation, science, and educational opportunities and increase visitation to D-E NCA. Unlike the other alternatives, Alternative D would increase the amount of land open to livestock grazing, providing more allocated grazing use than all alternatives.

While D-E NCA employment and labor income contributions are greatest under Alternative D, this alternative would provide less protection of non-market values associated with natural amenities than the other alternatives, apart from Alternative A (Table 4.41). Protection of non-market values associated with visual resources, ACECs, wilderness characteristics would be greatest under Alternative B, while protection of the additional non-market values associated with WSR segments would be greatest under Alternative C. Although the economic contributions of these non-market values are not included in this analysis, protection of D-E NCA's natural amenities may also contribute to employment and income in the local area.

### ***Impacts from Management of Recreation***

While change in recreation may occur as a result of planning actions under the action alternatives, the role of recreation in the local economy will continue to increase as OHV use, boating, hiking, biking and other forms of recreation continue to increase. It is anticipated that current management will allow for an approximate increase in recreational visitation of 2 percent per year on the basis of population projections for the three-county analysis area (see assumptions above); consequently local and non-local visitation under each alternative depicts this baseline increase in visitation over the 20 year planning period (Table 4.67).

As noted in Chapter 3, residents and recreationists feel that the local area supports unique recreational opportunities that are credited with attracting visitors and maintaining visitor spending in the local economy. While the mix of recreation visitation at D-E NCA may change in response to new management objectives outlined by the action Alternatives, recreation management under all alternatives would continue to sustain a wide range of opportunities that are directly attributed with supporting local employment and income. Over the next 20 years, recreation in the DE-NCA is anticipated to grow to include 77,357 non-local and 62,384 local visits annually (Table 4.67).

Expenditures resulting from these D-E NCA visits will also increase and are estimated to support 69 local jobs and \$3.4 million in regional labor income (Tables 4.68 and 4.59).

The value these experiences hold for recreational users should not be overshadowed by the jobs and income associated with recreation management. In addition to stimulating economic activity and supporting local employment and income, outdoor recreation on the DE-NCA provides visitors with additional non-monetary benefits. The value of recreational experiences on these BLM lands is currently valued at more than \$5.7 million. As visitation to the DE-NCA increases, benefits accrued to outdoor recreationists will also rise. Under Alternative A, DE-NCA's recreational resources can be valued at more than \$5.85 million.

Although resource management under the alternatives may affect the mix of recreation visitation at D-E NCA, these management plans may provide opportunities that are more commensurate with desired recreational experiences, which could increase the value of experiences and reduce conflicts between various types of recreationists and other land users. For example, conflicts between motorized and non-motorized users may no longer occur in some areas with restrictions designed to protect biological and cultural resources. In addition, conflicts between recreationists and NCA livestock grazing may also decrease in some areas. As a result of these actions, desired recreational experiences are likely to improve in some areas. Changes in the quantity and quality of these recreation experiences offered are discussed in the recreation section of this Proposed RMP.

Although Alternatives B and C would accommodate similar visitation levels and support the same contributions as visitor expenditures under Alternative A, the focus of these management plans vary greatly. Under Alternative B, the BLM would target specific recreational activities within designated multiple-use ERMAs, but it would not make a commitment to specific recreational outcomes or settings. In addition, this alternative would restrict recreation throughout the D-E NCA in order to meet cultural and biological resource objectives. Under Alternative C, recreation would be geared toward recreational outcomes and experiences that are most consistent with biological restoration, cultural resource protection and livestock grazing. Consequently much of the D-E NCA would not be managed as recreation management areas, with only two areas proposed for SRMA management. Although reduced SRMA management within the D-E NCA may result in decreases in motorized use, non-motorized and mechanized uses are anticipated to increase in these areas. Thus, D-E NCA would not experience a net change in recreational use as a result of new route designations (personal communication with field office staff, March 2012). Changes in the type of activities supported by these lands may not result in a net change in annual visitation, but use values from recreational activities are targeted under Alternative B and anticipated to be slightly higher than under Alternative A.

Recreation management under Alternative D would accommodate a wide variety of recreation experiences and outcomes. Under this alternative, a large percentage of the D-E NCA would be designated as SRMAs, where management would be tied to specific outcomes and settings. In SRMAs associated with the development of high-quality, trail-based recreation, visitation would be expected to increase. Thus levels of recreation anticipated under Alternative D are more than the other alternatives due to anticipated increases in use with these changes in recreation management. As shown in Table 4.67, recreational visitation is anticipated to be highest under Alternative D. Although economic contributions from visitation under Alternative D would be similar to those under the other alternatives, recreational use values for the DE-NCA would be highest under this alternative. Recreational experiences supported under this alternative are valued at more than \$5.89 million.

Although recreation management under Alternative D and the Proposed Plan Alternative would support a similar variety of recreation experiences and outcomes, the Proposed Plan Alternative focuses less on facility improvements, which are expected to increase recreational visits to D-E NCA. Thus the level of recreation anticipated under the Proposed Plan Alternative is more than Alternatives A, B and C but slightly less than Alternative D. As a result, local employment and income supported by recreation-related spending under this alternative would be similar to those under the other alternatives (Tables 4.68 and 4.69). Non-market values associated with recreation under the Proposed Plan Alternative would be higher than those under Alternative A, B, and C; but the value of outdoor recreation on the DE-NCA would be slightly lower than under Alternative D.

With more SRMA designation than the other alternative, recreation opportunities on BLM managed land may be more commensurate with desired recreational experiences under Alternatives D and the Proposed Plan Alternative. As a result of these actions desired recreation experiences are likely to improve relative to the other alternatives. Consequently, the value of the recreation experience on BLM lands could increase relative to the other alternatives.

### ***Impacts from Management of Livestock Grazing***

Public land forage provides a low cost and important complement to other sources of forage used by local livestock producers and supports jobs and income within the region. Current allocated grazing privileges on D-E NCA lands support approximately 32 jobs and \$583,000 in labor income on annual average within the three-county region (Tables 4.68 and 4.69), of which eight jobs and \$139,000 in labor income can be attributed to sheep grazing on BLM lands within the D-E NCA. BLM management under Alternative B would restrict grazing activities on several allotments, resulting in the production of fewer AUMs and grazing privileges under this alternative. Although decreases in livestock grazing from BLM lands in the three-county analysis area would not appear to impact the overall supply of forage to producers in the entire three-county analysis area<sup>5</sup>, smaller communities and individual operators within the three-county analysis area could experience adverse impacts. Changes to individual allotments are discussed in the grazing section of this Proposed RMP.

Under Alternative B, livestock grazing would be restricted to meet biological resource objectives. These restrictions would result in the closure of several allotments due to poor rangeland health conditions and the D-E NCA would be closed to grazing by domestic sheep in order to reduce the possibility of disease transmission to desert bighorn sheep. Of the five allotments within the D-E NCA that are currently grazed by domestic sheep, one allotment would be converted to cattle. The other four allotments would be closed due to poor rangeland health conditions. Consequently, projections of allocated grazing use under Alternative B are significantly less than those of any other alternative (Table 4.67). On an average annual basis, this alternative would support 22 jobs and \$393,000 in labor income within the three-county analysis area (Tables 4.68 and 4.69), of which three jobs and \$52,000 of labor income would be attributed to sheep grazing on BLM lands within the D-E NCA.

Alternative C and the Proposed Plan Alternative are projected to provide slightly fewer grazing allocations than current allocations, while Alternative D would provide more AUMs than any other alternative (Table 4.67). On an average annual basis Alternative C would support 32 jobs and \$574,000 in labor income, whereas Alternative D and the Proposed Plan Alternative would support 32 jobs and more than \$580,000 in labor income within the three-county analysis area

<sup>5</sup> Under each alternative, BLM cattle forage would continue to constitute less than 1 percent of local livestock inventory in the three-county analysis area; (USDA 2012)

(Tables 4.68 and 4.69). Due to the ambitious biological objectives established under Alternative C, AUMs and subsequent economic production from livestock grazing would likely decrease over time under this alternative. In addition, the conversion of allotments from domestic sheep to cattle under Alternative C would lead to small decreases in employment and labor income for the domestic sheep industry in the three-county impact area. Although employment supported by livestock grazing under Alternative C and the Proposed Plan Alternative would be similar to employment under the Proposed Plan Alternative, it is anticipated that management actions under Alternative C and the Proposed Plan Alternative would decrease local labor income by \$9,000 and \$3,000, respectively, on an annual basis.

Although changes in range management are not anticipated to significantly affect the region's livestock industry, reduced access to Federal forage may have adverse effects on individual ranchers and the ranching way of life. Proposed restrictions and closures would limit access to critical seasonal forage, making it more difficult for local cattle and sheep herders to sustain current herd sizes. The financial burden of trying to offset Federal forage losses with more expensive private forage or supplement feed may force some local ranchers to transition land and other ranch resources from livestock production to other agricultural uses or abandon agricultural practices altogether.

In addition to the employment and income supported by BLM forage, payments to counties associated with grazing fees may also be negatively impacted by the additional grazing restrictions anticipated under Alternatives B, C, and the Proposed Plan Alternative. Although these impacts are discussed below under the subsection on impacts on counties, it is important to make the connection that allocated grazing affects income and employment stemming from local government expenditures in addition to the contributions of actual livestock production.

Small changes in the levels of employment and income associated with the proposed action alternatives should not overshadow potential increases in other values that may result from more restrictive grazing practices. Reducing use on several allotments under these alternatives could reduce conflict and increase value to other resources. Despite the anticipated losses of livestock grazing under Alternatives B, C, and the Proposed Plan Alternative, the protection of bighorn sheep habitat under Alternative B and the creation of ACECs under Alternatives C and D would provide local communities with other benefits that may offset the small decreases in employment, labor income, and the value of lost forage.

### ***Impacts on Counties***

Under all alternatives, private land in the D-E NCA identified for acquisition from willing sellers could be acquired through purchase or exchange. Thus, entitlement acreage used to calculate PILT could increase (Table 4.70). Further site-specific NEPA analysis not covered under this plan would evaluate the availability of proposed land for acquisition. If acquired, these lands would no longer contribute to county revenues from property tax. To help offset losses in property taxes due to the nontaxable status of Federal lands within State or county boundaries, counties receive payments in lieu of taxes (PILT) on these acres from the Federal Government. Predicting county payments on the basis of changes in entitlement acreage alone is impractical due to other factors used to determine PILT payments such as changes in the population ceiling and congressionally approved annual appropriation acts. Nevertheless, if the BLM acquires land, it would be considered as entitlement acreage whereas before acquisition it was not.

Payments to counties under the action and No Action alternatives include PILT attributable to the BLM in the D-E NCA and a portion of grazing lease fees (Table 4.70). Actual payments cannot be

projected due to uncertainty in congressionally approved annual appropriation acts determining PILT, and actual grazing use. Regardless, contributions from these payments are likely to remain a small but important portion of county revenue (less than 1 percent of total county revenues in the three-county analysis area; U.S. Department of Commerce 2009).

**Table 4.70. Average Annual Payments to Study Area (2012 Dollars)**

Output	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
PILT	\$271,343	\$271,343	\$271,343	\$271,343	\$271,343
Grazing (Portion of Grazing Fees)	\$2,701	\$1,881	\$2,660	\$2,703	\$2,690
Total	\$274,044	\$273,224	\$274,003	\$274,046	\$274,033

Although PILT payments are anticipated to continue at current levels under both the action and No Action alternatives, projected changes in allocated grazing under the action alternatives will decrease revenue from grazing lease fees, causing a slight decrease in county grazing payments (Tables 4.67 and 4.70). The slight decreases in grazing-related payments anticipated under the proposed action alternatives would not meaningfully affect the income and employment supported by payments to counties of less than one job and \$2,000 in labor income (Tables 4.68 and 4.69). As discussed above, this estimate is based on current PILT payments, current AUM prices and projections of future grazing allocations. Actual payments cannot be projected due to uncertainty in future grazing allocations and congressionally approved annual appropriation acts, which determine PILT payments. Regardless, contributions from these payments are likely to remain a small but important portion of county revenue (less than 1 percent of total county revenues in the three-county analysis area; U.S. Department of Commerce 2009).

### ***Impacts from BLM Expenditures and Employment***

Levels of expenditures and employment at the Field Office are not expected to vary as a result of the action alternatives. While different action alternatives may cost more or less to implement, speculating whether the appropriated budget will change is impractical. Thus a constant budget over the life of the plan is a reasonable and practical assumption. Under all the alternatives, it is estimated that average annual BLM expenditures would continue to support about 11 total jobs and \$581,000 in total labor income (Tables 4.68 and 4.69) in the three-county analysis area economy. In addition to direct job and income impacts from BLM employees and their salaries, these estimates include impacts on industries that provide factors of production to the BLM, and other industries impacted by wage related spending.

### ***Impacts from Externally Funded Projects***

A portion of the management activities occurring in the D-E NCA are carried out with funds not provided by the BLM. Consequently, these funds are not accounted for under BLM expenditure of their appropriated budget discussed above. These funds often come from external sources such as stewardship grants. Examples within the D-E NCA include weed removal and other activities. In addition, the BLM works with the community providing contracting opportunities and environmental education partnerships with schools. Under the No Action Alternative current projects would continue consequently, employment and labor income supported by externally funded projects under this alternative (Tables 4.68 and 4.69) are the same as supported currently.

### ***Impacts from the Role of Amenities, Amenity Migration and Non-Market Values***

The economic impact analysis above assesses the economic effects of the direct use of resources in terms of jobs and income. This type of analysis does not include other types of economic value often referred to as non-market values. Non-market values are important to the well-being of visitors, area residents and others outside the three-county analysis area. These values include natural amenities, quality of life factors, recreational opportunities, ecosystem services and non-use values such as existence, option and bequest values. As noted above, non-market values are difficult to quantify and insufficient data exist to assess the effects from management actions. However, the fact that no monetary value is assigned does not lessen their importance in the decision making process.

In addition, helpful inferences can be made. While there is a general consensus that non-use values exist, the methodologies for measuring these values are controversial and difficult to apply. Although wilderness has been the subject of numerous non-use studies at other natural areas, no attempt has been made to directly elicit potential non-use values associated with wilderness in the D-E NCA. The alternatives outlined in Chapter 2 would establish areas to be managed for wilderness character and visual resources, and protect natural and cultural resources through other special designations such as ACECs, heritage areas, and suitability for congressional wild and scenic river designation. These management actions would further maintain and perhaps enhance non-market values associated with natural amenities protected on these lands.

Additionally, land to be managed for wilderness character, WSR suitability, and VRM Class I and II acres may attract new residents and tourists to the area, which would then contribute to area economic activity. While in some cases land protection could directly reduce certain types of recreation visitation and other resource uses, it has been shown that the presence of natural amenities can offset job losses due to population growth (Eichman, Hunt, Kerkvliet, and Plantinga 2010). It should be noted that protection of natural amenities benefit fish and wildlife (see section 4.3.2.3), which may improve opportunities for hunting and fishing, both of which are a major source of income for the State of Colorado and the three counties in which the D-E NCA is located (Pickton and Sikorowski 2004). Natural amenities and quality of life have been increasingly recognized as important factors in the economic prospects of many rural communities in the West (Rudzitis and Johnson 2000). In addition, non-labor income in the three-county analysis area is intimately tied to natural amenities as discussed in Chapter 3. Rural county population change, the development of rural recreation, and retirement-destination areas are all related to natural amenities (McGranahan 1999). Thus, designations that maintain and protect natural amenities similarly contribute to an area's economic well-being.

Alternative A, the No Action Alternative, would manage fewer acres under VRM Class I and II classifications than the action alternatives, effectively preventing less noticeable changes in the D-E NCA's landscape. In addition, this alternative would manage less land under protected area designations relative to the action alternatives. Therefore, this alternative would provide the least protection of non-market values associated with natural amenities amongst the alternatives (Table 4.71). Consequently, well-being associated with non-market values and potential contributions from new residents and tourists attracted by natural amenities could be less than for the other alternatives.

**Table 4.71. Acres Managed for Resource Protection**

	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
<b>VRM I</b>	69,238	93,468	71,679	107,636	82,830
<b>VRM II</b>	36,769	116,519	138,308	102,351	127,169
<b>Total Acres Managed as VRM I or II*</b>	106,007	209,987	209,987	209,987	209,999
<b>Acres Managed for Wilderness Character (Outside Designated Wilderness and WSA)</b>	–	21,816	–	–	13,597
<b>Heritage Areas</b>	–	22,663	22,663	25,543	25,543
<b>Special Designations</b>					
<b>ACECs</b>	1,900	–	12,823	29,663	9,011
<b>WSR Suitability</b>	–	9,027	26,026	–	3,728
*On the basis of the proposed management decisions in this RMP, these areas would typically have fewer surface-disturbing activities occur within their boundaries compared to other locations in the analysis area. Acreage total does not include VRM Class III or IV, as these classes include objectives other than the retention and preservation of existing character of the landscape (BLM 2010b).					

Under the action alternatives, more than 209,000 acres within the D-E NCA would be protected through special management areas and/or land designations that protect the area's natural amenities (e.g., VRM Classes I and II). While all action alternatives would manage approximately the same number of acres for visual resources under VRM Class I or II protection, land designations under these alternatives would vary greatly. In addition to managing NCA lands for their visual resources, the natural amenities and cultural resources of these lands would be given added protection through designations as ACECs, heritage areas, and as being suitable for congressional WSR designation.

Although Alternative B would manage the most lands for wilderness character, this alternative would provide less protection of ACECs than any other alternative; therefore, Alternative B would provide the most protection of non-market values associated with wilderness character and the least protection of non-market values associated with ACECs (Table 4.71). Although Alternative C would establish the same acreage of heritage areas as Alternative B, this alternative would provide the greater protection of areas suitable for congressional WSR designation and greater protection of ACECs than Alternatives A, B, and the Proposed Plan Alternative (Table 4.71). Under Alternative D, a greater number of acres would be designated as ACECs and heritage areas than under the other alternatives, but this alternative would not provide any protection of potential WSR areas or wilderness character (Table 4.71).

Without further site-specific analysis it is unclear which designations have the greatest non-market values associated with the natural and cultural amenities they protect, but it is assumed that protection of non-market values increases with acreage. Since the action alternatives would provide greater protection of D-E NCA's natural amenities and cultural resources, the well-being associated with the non-market values and potential contributions from new residents and tourists attracted by these amenities could be more under the action alternatives than under Alternative A.

## Social

Social groups are defined to facilitate the discussion of social impacts. These discussions simplify what are often quite complex and unique values and attitudes, and the groupings presented here



are by no means mutually exclusive. For example, many ranchers also participate in recreation activities. It is also worth noting that attitudes, interests, and values often change over time. The social analysis covers the groups and individuals that are most likely to be affected by this plan. These groups were identified on the basis of the results of public scoping and comments received during the planning process. This analysis addresses the potential impacts of the alternatives on the basis of the issues and concerns raised by these groups. The analysis draws upon ongoing discussions between the BLM and potentially affected publics, as well as discussions with subject matter experts involved in other parts of the analysis. The analysis is primarily qualitative with quantitative measures used as appropriate.

### ***Impacts on Individuals Interested in Recreation and Access***

Under all alternatives, local and non-local recreation visits are expected to continue to increase. Employment and income related to recreational activities, many of which are dependent on access to public lands, will at minimum continue to support this community's quality of life. While localized changes in access could occur under the action alternatives, it is anticipated that recreation opportunities will be maintained and enhanced through protected land designations and special management areas (see Table 4.72 below), thus accommodating existing recreation uses and expected increases in recreation uses (Table 4.63). Therefore, no decrease in quality of life is anticipated from changes in recreation access under the action alternatives. Additional changes in the quantity and quality of recreational experiences are discussed in the recreation section of Chapter 4 of this Proposed RMP.

**Table 4.72. Designated Recreation Areas**

Resource Program	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Proposed Plan Alternative
Designated SRMAs (Acres)	–	–	38,339	90,278	46,795
Designated ERMAs (Acres)	–	109,602	–	37,523	94,491
Watchable Wildlife Areas (Acres)	–	–	–	11,202	11,202
Routes on BLM- Administered Lands Available for Public Motorized Use (Miles)	626	329	186	329	407

Alternative A does not assign areas to be managed as ERMAs or SRMAs, and would thus appeal less than the other alternatives to visitors seeking targeted recreation opportunities. While motorized use would continue to be limited to designated routes, Alternative A would allow public travel on 626 miles in areas designated as available for public motorized use. Consequently, recreation management and route designations under this alternative would accommodate continued visitation increases of approximately 2 percent per year (this estimate is based on population projections for the three-county analysis area; see assumptions above).

Within ERMAs, the BLM would target specific recreational activities under Alternative B, but it would not make a commitment to specific recreational outcomes or settings in SRMAs. Thus Alternative B would appeal less than alternatives C and D to visitors seeking targeted recreation opportunities. Alternative B would allow public travel on 329 miles in areas designated as available for public motorized use. In spite of the decrease under this alternative (relative to Alternative A) in miles where public travel would be allowed, it is anticipated that recreation management and route designations under this alternative would accommodate recreational levels

similar to the expected rates of increase discussed under Alternative A. Given this increase, average annual recreation visits are the same as experienced under Alternative A (Table 4.67).

Alternative C would appeal more than Alternatives A and B to visitors seeking targeted non-motorized recreation opportunities. In spite of the decrease under this alternative (relative to Alternatives A and B) in miles where public travel would be allowed, it is anticipated that changes in recreation management and route designations would affect the type of recreational use (fewer motorized recreational visits but more non-motorized recreational visits) but not the overall level of use; thus, recreation management under this alternative would accommodate total recreation visitation similarly to the expected rates of increase discussed under Alternative A. Given this increase, average annual recreation visits are the same as experienced under Alternative A (Table 4.67). Thus Alternative C would continue to support quality of life through continued recreation uses and access to the D-E NCA. Additional changes in the quantity and quality of recreational experiences are discussed in the recreation section of Chapter 4 of this Proposed RMP.

Recreation management under Alternative D and the Proposed Plan Alternative would designate a larger percentage of NCA land as SRMAs and ERMAs, where management would be tied to specific outcomes and settings. Thus these alternatives would appeal more than the other alternatives to visitors seeking targeted recreation opportunities. Alternative D would allow public travel on 329 miles in areas designated as available for public motorized use, while the Proposed Plan Alternative would allow public travel on 407 miles of designated routes in areas available for public motorized use. In spite of the decreased mileage for public travel under these alternatives (relative to Alternative A), it is anticipated that recreation management and route designations under these alternatives would accommodate recreation levels similarly to the expected rates of increase discussed under Alternative A, with additional visitation attracted by trail-based SRMAs established under Alternative D and the Proposed Plan Alternative (10- to 15-percent and 5- to 10-percent higher than Alternatives A, B, and C) (Table 4.67). With increased recreation visitation and more opportunity for targeted recreation opportunities these alternatives could support higher levels of quality of life associated with NCA recreation.

Although miles of designated routes open for public travel would decrease under the action alternatives, the BLM would provide visitors with access to high quality motorized and non-motorized recreation opportunities under Alternative D and the Proposed Plan Alternative. In addition, under Alternative D and the Proposed Plan Alternative, the BLM would invest in facilities to improve the recreation experiences, and restrict recreational uses in areas where motorized, mechanized, and foot and horse recreation may conflict in order to improve recreational experiences.

### ***Impacts on Individuals Interested in Grazing as a Land Use of Traditional and Cultural Importance***

The section on individuals and groups interested in grazing as a land use of traditional and cultural importance noted the importance of continued livestock grazing use and the social and cultural importance grazing plays in area communities. Under Alternative A, projections of allocated grazing use (Table 4.67) would continue to provide the same level of forage as available for lessees and permittees in the past. Resulting employment and income generated from livestock grazing activities would continue to contribute to the quality of life for those depending on the industry connected industries. In addition, the social and cultural value associated with BLM forage would be maintained under this alternative.

Although allocated grazing use under Alternatives C, D, and the Proposed Plan Alternative are projected to be slightly less than current D-E NCA allocations, only Alternative B is expected to significantly impact NCA grazing allocations. Under Alternative B sheep grazing would be prohibited within D-E NCA and all current sheep allocations would be converted to cattle, causing projected allocated AUMs to significantly fall relative to alternatives continuing to support sheep grazing. While the three-county analysis area exhibits a low level of dependency on D-E NCA forage (the cattle BLM forage could support under this alternative would constitute less than 1 percent of 2012 inventory in the three-county analysis area; USDA 2012) employment and income supported by D-E NCA livestock grazing would be slightly less than in the past under these alternatives; consequently the quality of life for those depending on the industry and connected industries could be less. In addition, restrictions on sheep grazing under Alternative B would negatively affect the social and cultural value of livestock grazing associated with grazing on D-E NCA lands.

### ***Individuals and Groups Interested in Edu-tourism***

The section on individuals and groups interested in opportunities and facilities for education and tourism noted the potential for business growth: specifically tours and trips that feature D-E NCA natural, anthropological, paleontological, geological, historical and recreation opportunities. Others see opportunities for fostering landscape stewardship ethics through youth and community education and participatory stewardship on D-E NCA lands. Under Alternatives A and B no new education facilities, interpretive facilities or educational partnerships would be emphasized. While current efforts would continue and will at minimum continue to support this community's quality of life, new efforts would not be emphasized.

Under Alternative C on-site interpretation and education would be minimal in order to prevent vandalism and damage to resources. Instead, off-site interpretation would be encouraged to increase understanding of the purposes of the D-E NCA. Alternative D and the Proposed Plan Alternative would encourage educational opportunities to a greater degree than the other alternatives, and the BLM would designate education emphasis areas, a watchable wildlife area and heritage tourism areas (two areas under Alternative D and one area under the Proposed Plan Alternative). Consequently, Alternative D and the Proposed Plan Alternative would likely foster greater levels of quality of life for these individuals and groups.

### ***Individuals and Groups Interested in Natural Amenities and Migration***

These individuals and groups are interested in social and non-market values associated with D-E NCA lands that encourage and maintain area population and business activity. Public comments received during scoping and other public involvement efforts conducted in support of this RMP indicated quality of life and natural amenities, often provide by the D-E NCA, attract residents to the area. Information from the public also indicated natural amenities and area quality of life has helped area businesses attract high-quality employees. Under the action alternatives, more land would be managed under protected area designations than under Alternative A (Table 4.71). In addition, the action alternatives assign areas to be managed as ERMA's or SRMA's, and would thus appeal more than current management to visitors seeking targeted recreation opportunities. Consequently, the action alternatives could provide higher levels of natural amenities than current management under Alternative A. Therefore, in comparison to Alternative A, the action alternatives may foster higher levels of values, attributes and quality of life that encourage and maintain area population and business activity. Effects on values, attributes and quality of life that

encourage and maintain area population and business activity are not distinguishable amongst the action alternatives.

Of particular importance was maintenance of a quality visitor experience for visitors and locals by providing a diversity of visitor experiences. Public comments received during scoping and other public involvement efforts also indicated interest in the BLM's approach to marketing; particularly balancing community identity and branding with the BLM's collaborative strategy. Under Alternatives A and B no new education facilities, interpretive facilities or educational partnerships would be emphasized. While Alternatives C, D, and the Proposed Plan Alternative would incorporate more Recreation Outcome Objectives and focus on improving the "understanding of NCA purposes and resources, greater appreciation for and stewardship of the biological and cultural resources and greater appreciation of the historical interaction of human activities with the D-E NCA's landscape." In addition, Recreation Outcome Objectives include "increased attraction of local communities as a place to live and/or retire." Consequently the BLM's collaborative strategy for the future under Alternatives C, D, and the Proposed Plan Alternative would be preferred by these individuals and groups.

### ***Impacts on Environmental Justice***

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low income populations. The Order further stipulates that agencies conduct their programs and activities in a manner that does not have the effect of excluding persons from participation in, denying persons the benefits of, or subjecting persons to discrimination because of their race, color, or national origin.

The facility improvements and land management directives under the action alternatives could result in increases in employment and labor income relative to current conditions (Tables 4.68 and 4.69), from which minority and low income populations may benefit. As noted above, access for recreation and other uses would be accommodated under all the alternatives. In addition, access for cultural uses, traditional materials and cultural sites will continue to provide valuable resources to communities in the area; sustaining lifestyles, traditions, ceremonies and the heritage that remain an important part of community lifestyle, rural character and quality of life.

Additionally, public involvement efforts for this project have been inclusive and the agency has considered input from persons or groups regardless of race, color, national origin, income, or other social and economic characteristics.

Specific management actions proposed under the action alternatives have been identified as having the potential to disparately effect environmental justice populations identified in Chapter 3. The prohibition of sheep grazing under Alternative B and reductions in projected AUM use under the other action alternatives would affect sheepherders disproportionately. While foreign sheepherders may be a component of area operations it is unknown whether permittees operating on the D-E NCA depend on foreign workers. If herders operating on D-E NCA allotments slated for closure are predominantly foreign, then these action alternatives have the potential to disparately affect these minority populations. In addition, prohibitions on the collection of plant materials (including firewood) have the potential to disparately affect environmental justice populations.

## Summary of Impacts from Alternatives

Alternative A is not expected to result in adverse impacts, reduce economic diversity (the number of economic sectors) or increase economic dependency, which occurs when the local economy is dominated by a limited number of industries. While shifts in emphasis could occur, these changes would not result as a consequence of planning actions under this alternative. As a result of Alternative A, about 118 total jobs (direct, indirect, and induced jobs) and \$3.4 million in total labor income (direct, indirect and induced income) would be generated in the three-county analysis area economy on an average annual basis from recreation, livestock grazing, payments to counties, BLM expenditures and externally funded projects on the BLM. Employment and labor income contributions are slightly higher than current contributions evaluated in Chapter 3 due to average annual anticipated increases in recreation visits.

While employment and labor income contributions under this alternative would be higher than alternatives B and C, this alternative would manage less acreage under VRM Class I and II designations. In addition to providing the least protection of D-E NCA's visual resources, Alternative A would protect fewer acres using special land designations (ACECs, lands with wilderness character, heritage areas, and areas suitable for congressional WSR designation) than the other alternatives (Table 4.71). Therefore this alternative would provide less protection than the other alternatives of non-market values associated with natural amenities protected on these lands.

Alternative B is not expected to result in adverse impacts, reduce economic diversity or increase economic dependency. While shifts in emphasis could occur, these changes would not result as a consequence of planning actions under this alternative. As a result of Alternative B, about 107 total jobs (direct, indirect and induced jobs) and \$3.2 million in labor income (direct, indirect and induced income) would be generated in the three-county analysis area economy on an average annual basis from recreation, livestock grazing, payments to counties, BLM expenditures and externally funded projects on BLM lands (Tables 4.68 and 4.69). Employment and labor income contributions are less than the other alternatives due to lower projected levels of allocated grazing resulting from the closure of allotments to domestic sheep grazing.

Although employment and labor income contributions under this alternative would be less than the other alternatives, this alternative would manage more acres to minimize changes in the natural characteristics of D-E NCA lands than any other alternative, with the exception of the Proposed Plan Alternative; and the only alternative to manage D-E NCA lands specifically for wilderness characteristics. Therefore this alternative would provide greater protection of non-market values associated with visual resources, wilderness characteristics, than the other alternatives however, less than Alternatives C in terms of the additional non-market values associated with WSR suitable segments.

Alternative C is not expected to result in adverse impacts, reduce economic diversity or increase economic dependency. While shifts in emphasis could occur, these changes would not result as a consequence of planning actions under this alternative. As a result of Alternative C, about 117 jobs and \$3.4 million in labor income would be generated in the three-county analysis area economy on an average annual basis from recreation, livestock grazing, payments to counties, BLM expenditures and externally funded projects on BLM lands (Tables 4.68 and 4.69). These employment and labor income contributions are lower than under the other alternatives, apart from Alternative B, due to lower levels of project grazing use evaluated under this alternative than the other alternatives.

While employment and labor income contributions under this alternative would be relatively the same as those supported by current NCA management, this alternative would provide greater protection of the D-E NCA's natural resources through special land designations. Therefore this alternative would provide more protection of non-market values associated with visual resources, ACECs and suitability for WSR designation relative to the other alternatives.

Alternative D is not expected to result in adverse impacts, reduce economic diversity or increase economic dependency. While shifts in emphasis could occur, these changes would not result as a consequence of planning actions under this alternative. As a result of Alternative D, 118 jobs and from \$3.4 million in labor income would be generated in the three-county analysis area economy on an average annual basis from recreation, livestock grazing, payments to counties, BLM expenditures and externally funded projects on BLM lands (Tables 4.68 and 4.69). These employment and labor income contributions are higher than under the other alternatives due higher anticipated recreation visits than the other alternatives. In addition, projected allocated grazing use is higher than all alternatives apart from Alternative A.

While employment and labor income contributions under this alternative would be higher than under the other alternatives, fewer areas would be designated under protected area designations than the other alternatives, apart from Alternative A (Table 4.71). While virtually the same amount of acreage managed for visual resources as under Alternative C, no river segments would be managed as WSR suitable or eligible segments. Therefore this alternative would provide less protection of non-market values associated natural amenities than the other alternatives, apart from Alternative A however, the most protection of non-market values associated with ACECs and Heritage Area designations.

The Proposed Plan Alternative is not expected to result in adverse impacts, reduce economic diversity or increase economic dependency. While shifts in emphasis could occur, these changes would not result as a consequence of planning actions under this alternative. As a result of the Proposed Plan Alternative, 118 jobs and \$3.4 million in labor income would be generated in the three-county analysis area economy on an average annual basis from recreation, livestock grazing, payments to counties, BLM expenditures and externally funded projects on BLM lands (Tables 4.68 and 4.69). These employment and labor income contributions are higher than under the other alternatives, with the exception of Alternative D, due to higher anticipated recreation visits.

While employment and labor income contributions under this alternative would be higher than the other alternatives, apart from Alternative D, this alternative would provide greater protection of the D-E NCA's visual resources through special land designations, apart from Alternative C. Therefore this alternative would provide more protection of non-market values associated with visual resources, ACECs and suitability for WSR designation relative to the other alternatives.

## Cumulative Impacts

The regional economy can be affected by a variety of factors including population growth, changes in interest rates, locations of new industries, recession, growth of new sectors, tax policy, and State economic policy. When compared to these impacts, the effects of the management actions under this RMP on the regional economy would be relatively small. Because the changes in economic activity presented above would be largely unnoticeable regionally, there should be no cumulative economic effects regionally. However, for smaller areas and communities in the three-county analysis area cumulative economic effects may occur.

### ***Recreation***

The BLM is required to complete comprehensive travel management plans to address motorized recreation, transportation, and travel issues within the planning area. The extent and nature of actions in these plans will determine the social and economic consequences for the area. Once this RMP is approved, the BLM would develop transportation plans that would identify a network of routes that would support some current uses now taking place in the three-county analysis area or expected to take place in the future. Since the southwest portion of the NCA borders the Uncompahgre National Forest, travel management plans must be developed to include uses on adjacent National Forest lands where BLM trails connect to those on Forest Service lands.

Population increases are anticipated over the period between 2010 and 2030 within the analysis area. According to projections from the Colorado State Demography Office (State of Colorado 2011), the population in the analysis area will increase by 51 percent. Individually, Delta, Mesa and Montrose Counties are anticipated to increase by 67, 44 and 64 percent, respectively. These population increases suggest use of BLM lands would continue to increase and are used to project baseline levels of anticipated recreation visitation in Table 4.67.

### ***Livestock Grazing***

Newer generations within traditional ranching families often do not maintain the family tradition given new challenges presented by changing market conditions such as increased cost of operation. While decreases in livestock grazing from closure of D-E NCA allotments would not appear to impact the overall supply of forage to producers in the entire three-county analysis area (the cattle BLM forage could support under this alternative would continue to constitute less than 1 percent of 2007 inventory in the three-county analysis area; USDA 2009b) smaller communities and individual operators within the analysis area could experience adverse impacts that could be exacerbated by the trend noted above.

### ***Impacts on Counties***

Under all the alternatives, the large dependence of county payments on contributions from PILT means payments do not vary enough amongst the alternatives to vary economic effects of the alternatives. In addition, current PILT payments and grazing revenues attributable to the D-E NCA contribute less than 1 percent to total county revenues in the three-county analysis area under all the alternatives (U.S. Department of Commerce 2009). Thus, county programs and infrastructure supported by these payments would not differ among the alternatives. Consequently, cumulative economic effects on counties would remain the same under the alternatives.

### ***BLM Expenditures and Employment***

Under all the alternatives, it is assumed the level of BLM expenditures and employment associated with D-E NCA management will not vary by alternative, thus employment and income supported does not vary among the alternatives. Consequently, any cumulative economic effects on those dependent on these contributions would remain the same under the alternatives.

### ***Externally Funded Projects***

Current levels of management conducted on BLM lands carried out with external funds not provided by the BLM would continue under all the alternatives. Consequently, any associated cumulative effects would be the same among the alternatives.

### ***Role of Amenities, Migration and Non-Market Values***

Establishing areas to be managed for wilderness characteristics, changes to ACECs, and other special designations such as VRM would further maintain and perhaps enhance non-market values associated with natural amenities protected on these lands. Natural amenities and quality of life have been increasingly recognized as important factors in many rural communities in the West (Rudzitis and Johnson 2000). Thus, the established ACECs, WSAs, and lands to be managed for wilderness character similarly contribute to an area's quality of life for communities interested in resource protection. The effects on quality of life from special area designations and management of these attributes on private, State, and other Federal lands cannot be projected, but they could be the greatest under Alternative D, because this Alternative contains the greatest acreage of special designations, and they could be the least under Alternative A, because this Alternative contains the least acreage of special designations (see Table 4.71).

### ***Environmental Justice***

Although the contribution of BLM forest products is likely small relative to forest products gathered from Forest Service lands, BLM contributions may be locally important. In some cases, forest-product gathering in winter months occurs on BLM lands, since USFS collection areas are closed and inaccessible from snow and mud. Thus, the changes in availability of forest products under Alternative B has the potential to further disparately affect minority and low-income populations, if for example low income or minority populations depend on fuelwood collected from BLM lands in winter months.

## **4.7. Unavoidable Adverse Impacts**

Section 102(C) of NEPA requires disclosure of any adverse environmental effects that cannot be avoided should the proposal be implemented. Unavoidable adverse impacts are those that remain following the implementation of mitigation measures or impacts for which there are no mitigation measures. No unavoidable adverse impacts are directly attributable to planning decisions found within this Proposed RMP. Some unavoidable adverse impacts occur as a result of implementing the RMP. Others are a result of public use of the BLM-administered lands within the planning area. This section summarizes major unavoidable impacts; discussions of the impacts of each management action (in the discussion of alternatives) provide greater information on specific unavoidable impacts.

Surface-disturbing activities would result in unavoidable adverse impacts under current BLM policy to foster multiple uses. Although these impacts would be mitigated to the extent possible, unavoidable damage would be inevitable. Long-term conversion of areas to other uses such as ROW development would increase erosion and change the relative abundance of species within plant communities, the relative distribution of plant communities, and the relative occurrence of seral stages of those communities. These activities would also introduce intrusions, which could affect the visual landscape.

Unavoidable damage to cultural and paleontological resources from permitted activities could occur if resources undetected during surveys were identified during ground-disturbing activities. In these instances, standard conditions of approval would require ceasing further activities upon discovery and the resource would be mitigated to minimize data loss. Unavoidable loss or destruction of cultural and paleontological resources could also occur from recreational use and travel, specifically in areas of high cultural sensitivity or areas containing vertebrate or



scientifically significant fossil resources. Unavoidable loss of cultural and paleontological resources due to non-recognition, lack of information and documentation, erosion, casual collection, and inadvertent destruction or use would also occur. Unavoidable damage to buried cultural resources could occur, particularly in construction situations.

Wildlife and livestock would contribute to soil erosion, compaction, and vegetation loss, which could be extensive during drought cycles and dormancy periods. Conversely, unavoidable losses or damage to forage from development of resources in the planning area would affect wildlife and livestock. Some level of competition for forage between these species, although mitigated to the extent possible, would be unavoidable. Instances of displacement, harassment, and injury could also occur. There could also be unavoidable damage to special status species from permitted activities if impacts are undetected during surveys prior to ground-disturbing activities.

Recreational activities and general use of the planning area would introduce additional ignition sources into the planning area, which would increase the probability of wildfire occurrence and the need for suppression activities. These activities combined with continued fire suppression would also affect the overall composition and structure of vegetation communities, which could increase the potential for high-intensity wildfires.

As recreation demand increases, recreation use would disperse, creating unavoidable conflicts as more users compete for a limited amount of space. In areas where development activities would be greater, the potential for displaced users would increase.

Numerous land use restrictions imposed throughout the planning area to protect sensitive resources and other important values, by their nature, affect the ability of operators, individuals, and groups who use the public lands to do so freely without limitations. These restrictions could also require the closing of roads and trails or limiting certain modes or seasons of travel. Although attempts would be made to minimize these impacts by limiting them to the level of protection necessary to accomplish management objectives, and providing alternative use areas for affected activities, unavoidable adverse impacts would occur under all alternatives.

Route-by-route travel management decisions would result in some routes being closed while others remain open for public use. Where route closures protect biological or cultural resources, unavoidable adverse impacts would occur for those recreational uses that would be curtailed as a result of such closures. Where routes are left open for public use, there would be unavoidable adverse impacts to biological and cultural resources (e.g., impacts to Colorado hookless cactus from recreational trails left open that are adjacent to existing plant populations).

## 4.8. Irreversible and Irretrievable Commitment of Resources

Section 102(2)(C) of NEPA requires a discussion of any irreversible or irretrievable commitments of resources that are involved in the proposal should it be implemented. An irretrievable commitment of a resource is one in which the resource or its use is lost for a period of time (e.g., modifications to the landscape from fire or other vegetation treatments). An irreversible commitment of a resource is one that cannot be reversed (e.g., the extinction of a species or disturbance to protected cultural resources).

Implementing the RMP management actions would result in surface-disturbing activities, including dispersed recreation and ROW development, which results in a commitment to the loss of irreversible or irretrievable resources. The associated surface disturbance from ROW

development is reclaimed after the facility is removed. However, surface disturbances from ROWs for roads used for recreation and public or personal access and recreational development are a permanent encumbrance of the land. Although new soil can develop, soil development is a slow process in many parts of the planning area. Soil erosion or the loss of productivity and soil structure might be considered irreversible commitments to resources. Surface-disturbing activities, therefore, would remove vegetation and accelerate erosion that would contribute to irreversible soil loss; however, management actions and BMPs are intended to reduce the magnitude of these impacts and restore some of the soil and vegetation lost. Primarily because of the number of acres available for recreational travel and ROW development, such disturbances would occur to the greatest degree under Alternative A. Alternatives C, D, and the Proposed Plan Alternative, and to the greatest extent Alternative B, contain additional conservation measures, mitigation measures, and stipulations to protect resources within the planning area.

Laws protecting cultural and paleontological resources would provide for mitigation of irreversible and irretrievable impacts on cultural resources from permitted activity.

## **4.9. Relationship Between Local Short-Term Uses and Long-Term Productivity**

Section 102(C) of NEPA requires discussion of the relationship between local, short-term uses of human environment, and the maintenance and enhancement of long-term productivity of resources. As described in the introduction to this chapter, “short-term” is defined as anticipated to occur within one to five years of implementation of the activity. “Long-term” is defined as following the first five years of implementation but within the life of the RMP (projected to be 20 years).

Short-term use of the air quality resource would not affect long-term productivity, except that air quality emissions in high enough concentrations could reduce vegetation and plant vigor. Across all alternatives management actions would result in various short-term effects, such as increased localized soil erosion, fugitive dust emission, vegetation loss or damage, wildlife disturbance, and decreased visual resource quality. Surface-disturbing activities, including utility construction and developed recreation would result in the greatest potential for impacts on long-term productivity. Management prescriptions and BMPs are intended to minimize the effect of short-term commitments and reverse change over the long term. These prescriptions and the associated reduction of impacts would be greatest under Alternative C and are present to a slightly lesser extent under the Proposed Plan Alternative for resources such as priority species and vegetation. However, BLM-administered lands are managed to foster multiple uses, and some impacts on long-term productivity might occur.

Short-term use of an area to foster ROWs and recreational use would result in long-term loss of soil productivity and vegetation diversity. Impacts would persist as long as surface disturbance and vegetation loss continue. In general, the loss of soil productivity would be directly at the point of disturbance, although long-term vegetation diversity and habitat value could be reduced due to fragmentation and the increased potential for invasive species to spread from the developments or disturbances. Alternatives A and B would have the greatest potential for short-term loss of productivity and diversity due to the lack of active mitigation and reclamation standards contained under Alternatives C, D, and the Proposed Plan Alternative. Alternative C would provide the greatest long-term productivity by promoting active management in many areas through closures or application of a broad suite of rehabilitation and monitoring actions.

The short-term use of big game severe winter range, birthing areas, and migratory corridors for ROWs and developed recreational use could impair the long-term productivity of big game populations by displacing animals from primary habitats and removing components of these habitats that might not be restored for more than 20 years. These short-term uses could also affect the long-term sustainability of some special status species. Gunnison sage-grouse, as well as other terrestrial special status species, could be affected by habitat fragmentation associated with short-term resource uses and road construction and use. Likewise, habitat for special status fish species and aquatic wildlife could be degraded by sedimentation and pollution of waterways caused by short-term uses of nearby habitats.

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## **Chapter 5. Consultation and Coordination**

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This Proposed RMP represents collaboration and communication among local citizens; organizations; and local, State, tribal and Federal Governments throughout the past two years. The Omnibus Act specified that this Proposed RMP “be developed with extensive public input.”

An Advisory Council was established to assist the BLM in developing and implementing the D-E NCA RMP. This was also specified in the Omnibus Act. The D-E NCA Advisory Council is composed of 10 members of the public representing various uses and communities in the surrounding three-county area. The D-E NCA Advisory Council met 35 times prior to release of the Proposed RMP. Each of those meetings was open to the public, and each meeting was attended by up to 60 or more members of the public.

Other public involvement efforts or public discussions that occurred to support this planning effort include the following:

- Public scoping, which took place from August 3, 2010, through October 1, 2010.
- A series of community conversations led by the Natural Resource and Land Policy Institute, based at Colorado Mesa University, preceding (Mesa State College 2007) and subsequent to (CMU 2011) the D-E NCA’s designation in March 2009 (available online: <http://1.usa.gov/1qKkMVi>).
- Results of visitor surveys conducted by the Natural Resource and Land Policy Institute, based at Colorado Mesa University (CMU 2011; available online: <http://1.usa.gov/1qKkMVi>).
- The BLM issued individual press releases and developed a project website to reach interested and affected members of the public (formerly at <http://www.blm.gov/co/st/en/nca/denca.html>; now at <http://1.usa.gov/1qKkMVi>). The BLM also released monthly issues of the *Canyon Clarion* newsletter to provide updates on the progress of the planning process, which are also available on this website.
- An independent stakeholder process – landowners, conservationists, recreationists and business leaders- established to consider whether streams within the D-E NCA were suitable for inclusion in the National Wild and Scenic Rivers System.
- Workshops, accompanied by a public comment period, conducted by the BLM in the cities of Delta and Grand Junction in the Fall of 2010 to solicit public input on travel management within the D-E NCA.
- Socioeconomic workshops conducted by the BLM in the cities of Delta and Grand Junction in fall 2011.

## 5.1. D-E NCA Advisory Council

The Omnibus Act called for the establishment of an advisory council, called the D-E NCA Advisory Council, specifically to “advise the Secretary with respect to the preparation and implementation of the management plan.” This council’s founding charter was approved by Secretary Salazar on February 5, 2010.

## Council Membership

The members of the 10-person D-E NCA Advisory Council were selected to represent the three counties within which the D-E NCA is located, as well as the diverse interests of the stakeholders in the area.

As of September 3, 2014, the 10 members of the Advisory Council are as follows:

- *Katie Steele*, Advisory Council Chair, resides in Grand Junction, is the co-chair of the Colorado Riverfront Commission, and has chaired the Robb River Rally event in the Grand Valley. She represents dispersed recreation and historical resources.
- *William “Bill” Harris*, Advisory Council Vice-Chair, resides in Montrose and is a past representative of the International Mountain Biking Association and a current board member of the Colorado Plateau Mountain Biking Trail Association. He is also a past president of the Colorado Archaeological Society. He was recommended for the Council by the Montrose County Commissioners. Bill also represents recreation, primarily mountain biking, and cultural resources.
- *Kaye Simonson* resides in Grand Junction and is a Mesa County planner. She represents Mesa County.
- *Oscar Massey* lives in Whitewater and is a rancher with Federal grazing permits within the D-E NCA since the mid-1970s. He represents grazing permit holders.
- *Tamera Minnick* resides in Grand Junction, where she is an associate professor of Environmental Science and Technology at Colorado Mesa University. She represents scientific, educational, and ecological values.
- *Ralph Files* is a resident of Montrose and on the Montrose County Parks Advisory Board. He represents Montrose County.
- *Bob Janowski* lives in Whitewater. He is a member of the Grand Mesa Jeep Club and the Western Slope ATV Association. He represents motorized recreation interests.
- *Kate Graham* is a resident of Grand Junction and a field organizer for Conservation Colorado. She represents environmental and wilderness values.
- *Steven Boyle* lives in Montrose and is the Principal at BIO-Logic, Inc., a natural resource consulting business. He is a wildlife and conservation biologist, formerly with CPW and the USFWS. He serves on the Gunnison Sage-grouse San Miguel Basin Working Group and is active in the Black Canyon Regional Land Trust and other programs to protect working farms and ranches from development. Steve represents wildlife and ecological interests.
- *Doug Atchley* resides in Delta and is a Delta County Commissioner. He retired from banking in 2007, managing a group of Wells Fargo banks that included branches in Delta, Gunnison, Telluride, and Montrose. He was a founding member of Delta Area Development, Inc., and has served as chamber president. He operates a cattle ranch in Delta County. Doug represents Delta County.



## Council Meetings

The Advisory Council has met 35 times since its establishment in December 2010. Each of these meetings was open to the general public, and provided an opportunity for the Council to make recommendations to the BLM regarding the RMP. At each meeting, the public had the opportunity to provide comments during two public comment periods, and used those comment periods to key Advisory Council members in to topics of interest to them. Table 5.1 below shows the dates and locations of these meetings. In addition to these meetings, the Advisory Council participated in two field trips. One field trip took place on May 26, 2011, along the Gunnison River, and another took place on November 19, 2011, in Cactus Park.

**Table 5.1. D-E NCA Advisory Council Meeting Dates and Locations**

Date	Meeting Location	Date	Meeting Location
1/5/2011	Delta	1/25/2012	Grand Junction
2/2/2011	Grand Junction	2/1/2012	Delta
3/2/2011	Delta	3/6/2012	Grand Junction
4/6/2011	Grand Junction	3/21/2012	Delta
5/4/2011	Delta	4/4/2012	Grand Junction
5/18/2011	Grand Junction	5/2/2012	Delta
6/1/2011	Delta	4/3/2013	Grand Junction
6/15/2011	Grand Junction	6/26/2013	Delta
7/6/2011	Delta	7/17/2013	Grand Junction
7/20/2011	Grand Junction	7/31/2013	Delta
8/3/2011	Delta	8/19/2013	Grand Junction
8/17/2011	Grand Junction	8/21/2013	Delta
9/7/2011	Delta	10/24/2013	Grand Junction
9/21/2011	Grand Junction	11/5/2013	Delta
10/5/2011	Delta	1/22/2014	Grand Junction
11/2/2011	Grand Junction	4/16/2014	Delta
12/14/2011	Delta	7/23/2014	Grand Junction
1/4/2012	Grand Junction		

## 5.2. Cooperating Agencies

A cooperating agency is any Federal, State, or local government agency or Indian tribe that enters into a formal agreement with the lead Federal agency (in this case, the BLM) to help develop and environmental analysis. More specifically, cooperating agencies “work with the BLM, sharing knowledge and resources, to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks” (BLM 2005).

In August 2010, the BLM invited 17 agencies and Indian Tribes to participate as cooperating agencies for the D-E NCA RMP. Of these, 8 agencies accepted this invitation and entered into memoranda of understanding that formalized this participation:

- City of Delta
- City of Grand Junction
- City of Montrose
- Colorado Division of Natural Resources (including representatives from CPW and CWCB)

- Delta County
- Mesa County
- Montrose County
- U.S. Forest Service
- U.S. Fish and Wildlife Service

The primary role of cooperating agencies is to provide input during the RMP development process on issues for which they have a special expertise or legal jurisdiction. Each cooperating agency assigned a representative to participate in the process.

The BLM is required by law to consult with the Colorado State Historic Preservation Office pursuant to Section 106 of the NHPA. A copy of the Draft RMP was sent to the SHPO following its release to the general public. In addition, the BLM is required to consult with the USFWS pursuant to Section 7 of the ESA. A Biological Assessment will be completed as part of this planning process. Discussions regarding this assessment were initiated once the Draft RMP was released for public review.

## Cooperating Agency Meetings

The first meeting of cooperating agencies took place on 1/20/2012 and met a total of seven times through the development of the Draft RMP. These meetings were not open to the public. At strategic points during the development of this Proposed RMP, cooperating agencies were invited to provide input to the BLM on draft documents and planning issues.

### 5.3. Tribal Consultation

In 2007, the BLM initiated the Ute Ethnohistory Project. This project actively involved Ute Cultural Resource staff and traditional leaders in the identification of issues and concerns for resource management plans (RMPs) for the BLM's Grand Junction and Uncompahgre Field Offices, as well as for the Dominguez-Escalante D-E NCA. Through this project, the BLM has determined that the Ute tribes consider the D-E NCA as part of their ancestral homeland.

In August 2010, the BLM invited the three federally recognized Ute Indian Tribes to participate as cooperating agencies for the D-E NCA RMP (see Table 5.2 below). These were the Ute Indian Tribe based in Fort Duchesne, UT, the Ute Mountain Ute Indian Tribe based in Towaoc, CO, and the Southern Ute Indian Tribe based in Ignacio, CO. The BLM has not entered into memoranda of understanding regarding this RMP with the Tribes identified above. Nonetheless, the BLM pursued formal consultations with these three Tribes' Tribal Councils in a government-to-government capacity during the development of this RMP/EIS. Meanwhile, BLM cultural resource staff continues ongoing consultations with tribal cultural staff that include discussions regarding this RMP. Tribal face-to-face consultation dates for the D-E NCA RMP were as follows:

- UMUT THPO: 2/7/2012; 5/7/2013; 4/28/2014; 10/13/2014
- UMUT Council: 3/13/2012

- UIT Council: 6/5/2013
- UIT Cultural Staff: 4/28/2014; 10/13/2014
- SUIT Council: 7/31/2013
- SUIT Cultural Staff: 4/28/2014; 10/13/2014

On 5/22/2013, letters were sent to the Ute Tribal Councils asking for comments on the D-E NCA RMP. In 2014, the Jemez Pueblo contacted the BLM Director about being involved with lands where the Fremont were present. The BLM will initiate consultation with them in 2015.

One of the outcomes of the Ute Ethnohistory Project was a recommendation that the BLM engage a wider number of tribes in order to gauge their interest in ongoing NEPA and RMP development. As a result, BLM staff from the D-E NCA and GJFO sent letters to the tribes listed in the table below. These letters were sent in August 2010 through February 2011. The BLM has not received feedback suggesting these tribes would like to be actively engaged in ongoing NEPA or RMP development for the GJFO or Dominguez-Escalante D-E NCA.

**Table 5.2. Native American Tribes Contacted During RMP Process**

Organization	City	State
Comanche Nation of Oklahoma	Lawton	OK
Eastern Shoshone Tribe	Fort Washakie	WY
Hopi Tribe	Kukotsmovi	AZ
Jicarilla Apache Nation	Dulce	NM
Kiowa Tribe of Oklahoma	Carnegie	OK
Navajo Nation	Window Rock	AZ
Ohkay Owingeh (Pueblo of San Juan)	San Juan	NM
Paiute Indian Tribe of Utah	Cedar City	UT
Pueblo de Cochiti	Cochiti	NM
Pueblo of Pojoaque	Santa Fe	NM
Pueblo of Santa Ana	Santa Ana Pueblo	NM
San Ildefonso Pueblo	Santa Fe	NM
Santa Clara Pueblo	Espanola	NM
Shoshone-Bannock Tribes	Fort Hall	ID
Southern Ute Indian Tribe	Ignacio	CO
Standing Rock Sioux Tribe	Fort Yates	ND
Ute Indian Tribe	Fort Duchesne	UT
Ute Mountain Ute Indian Tribe	Towaoc	CO

## 5.4. State Historic Preservation Office Consultation

SHPO consultation occurred in 2006, resulting in Addendum 1 to the State Protocol that fulfilled BLM's Section 106 responsibilities for all land use planning efforts involving travel management planning decisions. This programmatic agreement applied to all land use plans initiated after the 2006 agreement. Case-by-case consultation is only required for new routes and new open areas, by planning area.

The Colorado Protocol, Section IV requires SHPO involvement in BLM Planning Processes. BLM shall provide the SHPO the opportunity to participate at the development stage and all subsequent phases of land use planning. BLM staff from the D-E NCA sent an interested party

letter to the SHPO in August 2013. The BLM has not received feedback from the SHPO on the D-E NCA plan.

## 5.5. Public Scoping

Scoping is an early and open process for determining the scope of issues to be addressed in the RMP, and for identifying the significant issues related to a proposed action. Information collected during scoping may also be used to develop a complete range of management alternatives to be addressed in a NEPA document.

Public scoping helps ensure that real problems are identified early and that they are properly studied, that issues of no concern do not consume time and effort, and that the proposed action and alternatives are balanced, thorough, and able to be implemented.

## Notice of Intent

The formal public scoping process for the D-E NCA RMP began on August 3, 2010, with the publication of the notice of intent (NOI) in the *Federal Register* (75 FR 45650–45652). The NOI notified the public of the BLM’s intent to develop an RMP for the D-E NCA; it also initiated the public scoping comment period, which closed on October 1, 2010. In addition to publication in the *Federal Register*, the NOI was posted on the project web site (formerly at [http://www.blm.gov/co/st/en/nca/D-E NCA.html](http://www.blm.gov/co/st/en/nca/D-E%20NCA.html); now at <http://1.usa.gov/1qKkMVi>).

## Open Houses

The BLM hosted two open houses to provide the public with opportunities to become involved, to learn about the project and the planning process, to meet the D-E NCA RMP team members, and to offer comments (see Table 5.3 below). The public was notified of the open houses by news release, fliers posted in Grand Junction and Delta, publication of the NOI, emails sent to a list of citizens that expressed interest in the area prior to the D-E NCA’s designation and through the project web site. Information on the open houses is provided in the table below.

**Table 5.3. Scoping Open House Information**

Venue	Town	Date	Attendees
<b>Courtyard Hotel</b>	Grand Junction	8/30	33
<b>Heddles Rec. Center</b>	Delta	8/31	18
<b>Total</b>			51
<i>Note: All meetings were from 6-8 PM.</i>			

Scoping meetings were held in an open house format to encourage participants to discuss concerns and questions with BLM staff representatives. The BLM gave a short presentation to provide an overview of the RMP process and present information about public involvement opportunities. Site and resource maps illustrated the current situation and management techniques practiced among different resources and land areas. In addition, summaries of resource issues were available to provide an overview of current management practices and issues. Copies of scoping comment forms were also available. As shown in the table above, 51 people attended the open houses.

## Scoping Report

A scoping report, which detailed the outcomes of the public scoping process, was provided to the public in March 2011 (BLM 2011d). This report was posted on the project web site (formerly at [http://www.blm.gov/co/st/en/nca/D-E\\_NCA.html](http://www.blm.gov/co/st/en/nca/D-E_NCA.html); now at <http://1.usa.gov/1qKkMVi>). Copies of the report were provided to the members of the D-E NCA Advisory Council and Cooperating Agencies.

### 5.6. Natural Resource and Land Policy Institute at Colorado Mesa University

This planning process was informed by a series of community discussions and user surveys around the topics of recreation and wilderness management conducted by the Natural Resource and Land Policy Institute (NRLPI) at Colorado Mesa University (CMU 2011).

#### Focus Group Discussions

The NRLPI at Colorado Mesa University, led by Professor Timothy Casey, conducted a series of focus group meetings regarding recreation and wilderness management in the D-E NCA (CMU 2011; see Table 5.4 below). This series of discussions was informed by a previous series of similarly structured focus group meetings that took place prior to the D-E NCA's designation (see Mesa State College 2007).

For the purpose of these meetings, or discussions, the D-E NCA was divided into five management zones. Zone 1 was the area between Highway 50 and the river corridor, otherwise known as the Hunting Ground. Zone 2 was the Gunnison River corridor. Zone 3 was the area between Highway 141 and the western boundary of the Wilderness. Zone 4 was the Wilderness itself. Zone 5 comprised the rest of the D-E NCA, including Escalante Canyon, Wagon Park, and Sawmill Mesa. Meeting participation was solicited by press release and email invitations to contacts that had expressed interest in the D-E NCA. The dates, location and participation in these meetings are shown in the table below. BLM staff attended but did not participate (and were not considered participants) in these meetings.

**Table 5.4. Focus Group Meetings**

<b>Zone</b>	<b>Meeting Location</b>	<b>Meeting Date</b>	<b>Participants</b>
<b>1</b>	Grand Junction	9/20/2010	15
<b>2</b>	Delta	9/22/2010	10
<b>3</b>	Grand Junction	9/27/2010	24
<b>5</b>	Delta	9/29/2010	28
<b>4 (Wilderness)</b>	Grand Junction	10/4/2010	27
<b>4 (Wilderness)</b>	Delta	10/6/2010	13
<b>Total</b>			117

In these focus group discussions, Professor Tim Casey followed a script designed to prompt discussion and feedback from the public on issues relating to desired recreation experiences and tradeoffs in wilderness management. Public participation occurred through open-ended discussion as well as through the use of I-clicker technology that allows participants to vote anonymously on “prompts” provided by Professor Casey.

The results of these meetings were documented in a report (CMU 2011) produced by the NRLPI and posted on the D-E NCA planning website (formerly at <http://www.blm.gov/co/st/en/nca/D-E NCA.html>; now at <http://1.usa.gov/1qKkMVi>). This report was used in the development of this Proposed RMP.

## Community Surveys

Between April 2009 and July 2010, the NRLPI at Colorado Mesa University administered surveys to visitors to the D-E NCA. Data were collected from both a brief on-site survey and a comprehensive take-home survey. These surveys were designed to collect, identify, and catalogue the benefits of recreation to D-E NCA public lands users.

Once the data from these surveys had been processed and analyzed, a report was produced by NRLPI (CMU 2011) that was then posted on the D-E NCA planning website (formerly at <http://www.blm.gov/co/st/en/nca/D-E NCA.html>; now at <http://1.usa.gov/1qKkMVi>). The findings in this report were used in the development of this Proposed RMP.

### 5.7. Gunnison River Basin Wild and Scenic River Stakeholders

In anticipation of the requirement that the BLM evaluate wild and scenic river suitability during this planning process as well as for the RMP revision being undertaken by the Uncompahgre Field Office, a group of stakeholders convened a series of independent meetings in 2010 and early 2011. This group first discussed eligible segments within the Uncompahgre Field Office before moving on to segments within the D-E NCA.

Five meetings were used to discuss D-E NCA segments. All of these meetings were held in Delta, CO, and took place on February 24, March 9, March 23, April 5 and April 13, 2011. Information regarding these meetings, as well as meeting notes, were posted on the BLM planning website (formerly at <http://www.blm.gov/co/st/en/nca/D-E NCA.html>; now at <http://1.usa.gov/1qKkMVi>).

These meetings were used to assemble information on existing uses and local values, potential threats to the outstandingly remarkable values (ORVs) identified by the BLM in its eligibility report, and to identify existing protections for these ORVs. The group also articulated the activities and attributes they feel are most important to protect on the eligible stream segments and their recommendations for managing them, including whether or not the segments should be found and managed as “suitable” for inclusion in the National Wild and Scenic Rivers System. The BLM, along with CPW and representatives of other agencies and organizations, attended this series of discussions to provide information and answer questions as the stakeholders assembled their information and recommendations.

The BLM received two letters from stakeholders in the Gunnison River Basin: one from the group comprised of landowners, farmers, ranchers, outfitters, water providers, water managers, recreational prospectors, electrical utility representatives, ATV riders, river recreationists, local governments, the State of Colorado, and interested citizens; and the other from a coalition of environmental organizations. These letters were posted on the D-E NCA planning website (formerly at <http://www.blm.gov/co/st/en/nca/D-E NCA.html>; now at <http://1.usa.gov/1qKkMVi>).

## 5.8. Travel Management Outreach

The Omnibus Act specified that the RMP for the D-E NCA include a comprehensive travel management plan. As part of the development of this Proposed RMP, the BLM solicited public input regarding its travel management route inventory and designation process.

The BLM held two open houses to initiate a public comment period for travel management, one in Delta on 11/9/2010 and one in Grand Junction on 11/10/2010. At these two open houses, the BLM provided an overview of the travel management planning process and provided instructions for how to provide feedback to the BLM. The questions that the BLM asked of the public were the following:

- Is our inventory complete and accurate?
- Which routes are important to you and why?

The public comment period lasted from 11/9/2010 through May 1, 2011. Due to higher than normal snow levels, the deadline for high elevation lands of the D-E NCA was subsequently extended through 6/15/2011. The BLM received 73 letters, emails and comment forms during this public comment period. These were used by the BLM interdisciplinary team during the travel management designation process in the summer of 2011.

## 5.9. Socioeconomic Workshops

The BLM conducted two socioeconomic workshops to discuss socioeconomic data/conditions and the role that the D-E NCA plays in its surrounding communities. One meeting was held in Grand Junction on 10/18/2011 and another was held in Delta on 10/19/2011. Information collected during these workshops was used in the development of this Proposed RMP.

## 5.10. Canyon Clarion

In January 2011, the BLM began publishing a newsletter called the *Canyon Clarion*. This newsletter provides updates on the RMP development process, and issues are posted on the D-E NCA planning website: <http://1.usa.gov/1qKkMVi>.

## 5.11. List of Preparers

Table 5.5 lists the individuals who participated in the preparation of this Proposed RMP, along with their areas of expertise.

**Table 5.5. List of Preparers**

Name	Office	Area of Expertise
<b>BLM Interdisciplinary Team</b>		
Ben Blom	Grand Junction Field Office	Planning team lead (former)
Amanda Clements	Uncompahgre Field Office	Vegetation and habitats; ACECs
Forrest Cook	Colorado State Office	Air resources

Doug Diekman	Grand Junction Field Office	Geographic information systems
Nathan Dieterich	Grand Junction Field Office	Soils and water quality; hydrology
Jim Dollerschell	Grand Junction Field Office	Livestock grazing
Collin Ewing	Grand Junction Field Office	Interim NCA Manager
Thomas Fresques	Colorado River Valley Field Office	Fisheries
Scott Gerwe	Grand Junction Field Office	Geological and paleontological resources; ACECs
Madeline Grant-Hoffman	Grand Junction Field Office	Science; education
Glade Hadden	Uncompahgre Field Office	Cultural resources; paleontology
Melissa Hovey	Colorado State Office	Air resources
Lathan Johnson	Grand Junction Field Office	Fire and fuels
Robin Lacy	Grand Junction Field Office	Lands and realty
Marie Lawrence	Grand Junction/ Royal Gorge Field Offices	Writing, editing, and associated tasks
Alissa Leavitt-Reynolds	Grand Junction Field Office	Cultural resources; national historic trails; Native American tribal interests
Anna Lincoln	Grand Junction	Vegetation and habitats, special status species, ACECs
Angela Losasso	Grand Junction/ Uncompahgre Field Offices	Planning team lead
Jacob Martin	Grand Junction Field Office	Livestock grazing; forestry
Jessica Montag	BLM Regional Economist	Socioeconomics
Heidi Plank	Grand Junction Field Office	Wildlife; ACECs; special status species
Linda Reed	Uncompahgre Field Office	Lands and realty
Lynae Rogers	Uncompahgre Field Office	Livestock grazing; noxious and invasive weeds
Melissa Siders	Uncompahgre Field Office	Wildlife; special status species; watchable wildlife areas, ACECs
David Sinton	Uncompahgre Field Office	Geographic information systems
Jedd Sondergaard	Uncompahgre Field Office	Hydrology
Samantha Staley	Grand Junction Field Office	Planning team lead (former)
Andy Windsor	Grand Junction Field Office	Recreation; wilderness; wild and scenic rivers; travel management; lands with wilderness characteristics; wilderness study areas; national historic trails
<b>Local Management Reviewers</b>		
Lori Armstrong	Southwest Colorado District	District Manager



James Cagney	Northwest Colorado District	District Manager (retired)
Joe Meyer	Northwest Colorado District	District Manager
Catherine Robertson	Grand Junction Field Office	Field Manager (retired)
Barbara Sharrow	Uncompahgre Field Office	Field Manager
Katie Stevens	Grand Junction Field Office	Field Manager
<b>Forest Service TEAMS</b>		
Jennifer Dobb	Forest Service TEAMS	Socioeconomics
Henry Eichman	Forest Service TEAMS	Socioeconomics; environmental justice
<b>EMPSi (Contractor)</b>		
Angie Adams	N/A	Lands with wilderness characteristics; wilderness; lands and realty; wilderness study areas
Zhoe Ghali	N/A	Livestock grazing; public health and safety
Kate Krebs	N/A	Scenic values; wild and scenic rivers
Carol-Anne Murray	N/A	Cultural resources; geological and paleontological resources; Native American tribal interests
Chad Ricklefs	N/A	Recreation; transportation and travel management
Drew Vankat	N/A	Fire and fuels; science; education; forestry
Jennifer Whitaker	N/A	ACECs; national historic trails
Steve White	N/A	Soils and water quality
Meredith Zaccherio	N/A	Vegetation and habitats; special status species; fish and wildlife

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## **Chapter 6. References**

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## **Chapter 7. Glossary**

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## A

**Acquisition:** The purchase or procurement of lands to facilitate various resource management objectives. Acquisitions, including easements, can be completed through exchange, Land and Water Conservation Fund purchases, or donations.

**Active movement:** Livestock movement from one grazing area to another, which involves the deliberate intent to keep cattle traveling, by the use of riding and herding, until they reach the next grazing area. Both crossing and trailing are forms of active movement. See **Crossing** and **Trailing**

**Active nest:** A nest site that is currently occupied by a pair of breeding birds.

**Actual use:** The number of animal unit months (AUMs—see definition) consumed by livestock, which is based on the livestock numbers and grazing dates submitted by the livestock operator and confirmed through periodic field checks conducted by the BLM.

**Adaptive management:** A type of natural resource management in which decisions are made as part of an ongoing science-based process. Adaptive management involves testing, monitoring, and evaluating applied strategies, and incorporating new knowledge into management approaches that are based on scientific findings and the needs of society. Results are used to modify management policy, strategies, and practices.

**Administrative use/access:** Authorized use or access. This pertains to motorized travel on routes that are limited to authorized users. Such authorized users could be livestock grazing permittees, Federal or State employees, or ROW holders. These are existing routes that lead to developments that have an administrative purpose (e.g., rights-of-way or livestock grazing developments), or where the BLM or a permitted user must have access for regular maintenance or operation.

**Age class:** A type of grouping or classification that describes the general age of vegetation within a given area (e.g., early seral, mid-seral, or late seral).

**Air pollution:** Degradation of air quality resulting from the presence of **noxious** chemicals or other hazardous materials in the air.

**Allotment:** An area of land **designated and managed for grazing of livestock**. Allotments generally consist of BLM lands but may also include other federally managed, State owned, or private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

**Allotment management plan (AMP):** A written program of livestock grazing management, including supportive measures if required, that is designed to attain specific management goals in a grazing allotment. An AMP is prepared in consultation with the permittees, lessees, and other affected parties. Livestock grazing is considered in relation to other uses of the range and to renewable resources, such as watershed, vegetation, and wildlife. An AMP establishes seasons of use, the number of animals to be permitted, the range improvements needed, and the grazing system.

**Allowable uses:** As defined by the Omnibus Act of 2009, allowable uses in the D-E NCA are those uses that further the purposes for which the D-E NCA was established. The Omnibus Act explicitly excludes operation under the mining, mineral leasing, mineral materials, and geothermal leasing laws, as well as entry, appropriation, or disposal under the **public land** (see

definition) laws. Within the Dominguez Canyon Wilderness, allowable uses exclude unauthorized motorized and mechanized travel.

**All-terrain vehicle (ATV):** A wheeled vehicle other than a snowmobile that has a wheelbase and chassis of 50 inches in width or less, handlebars for steering, generally a dry weight of 800 pounds or less, three or more low-pressure tires, and a seat designed to be straddled by the operator.

**Alluvial:** Pertaining to or composed of alluvium (see **Alluvium**).

**Alluvium:** Sediment deposited by a stream or running water.

**Analysis of the management situation (AMS):** A document assessing the current management direction. It includes a consolidation of existing data needed to analyze and resolve identified issues, a description of current BLM management guidance, and a discussion of existing problems and opportunities for solving them. For the D-E NCA, this document (BLM 2011a) is available online: <http://1.usa.gov/1qKkMVi>.

**Ancient (vegetation):** The oldest stage of old-growth woodlands (450 years or more) that have persisted through multiple droughts.

**Animal unit month (AUM):** The amount of forage necessary to sustain one cow, five sheep, or five goats for a period of one month, or approximately 800 pounds of air-dried material.

**Anticline:** A fold, generally convex upward, whose core contains stratigraphically older rocks.

**Area of critical environmental concern (ACEC):** An area designation established through the BLM's land use planning process (43 CFR 1610.7-2), where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. The level of allowable use within an ACEC is established through the collaborative planning process. Designation of an ACEC allows for resource use limitations in order to protect identified resources or values.

**Artesian aquifer:** A water-bearing bed that contains water under hydrostatic pressure (see also **Aquifer**).

**Associated setting** (as it relates to **National Historic Trails**): The geographic extent of the resources, qualities, and values or landscape elements within the surrounding environment that influence the trail experience and contribute to resource protection. Settings associated with a national scenic or historic trail include scenic, historic, cultural, recreation, natural (including biological, geological, and scientific), and other landscape elements.

**Aquifer:** A groundwater reservoir composed of geologic units that are saturated with water and sufficiently permeable to yield water in a usable quantity in wells and springs.

## B

**Burned Area Rehab (BAR):** Efforts undertaken within three years of containment of a wildfire to repair or improve fire damaged lands unlikely to recover naturally to management approved conditions, or to repair or replace minor facilities damaged by fire.

**Bat gate:** A structure designed to keep people out of an abandoned mine yet allow bats to use the mine as a roost. Gates can also protect bat roosts from predators.

**Bedrock:** The solid rock that underlies gravel, soil, or other superficial material on the earth's surface.

**Beneficial outcomes:** These refer to improved conditions, maintenance of desired conditions, prevention of worse conditions, and realization of desired experiences (see also **Recreation benefits**).

**Big game:** Indigenous ungulate wildlife species that are hunted, such as elk, deer, bighorn sheep, and pronghorn antelope.

**Biodiversity (biological diversity):** The variety of life and its processes and the interrelationships within and among various levels of ecological organization. Conservation, protection, and restoration of biological species and genetic diversity are needed to sustain the health of existing biological systems. Federal resource management agencies must examine the implications of management actions and development decisions for regional and local biodiversity.

**Biological control:** The use of living organisms (e.g., insects, pathogens, nematodes, and mites) to achieve management objectives, such as noxious and invasive weed control.

**Biological soil crust (BSC):** A complex association between soil particles and cyanobacteria, algae, microfungi, lichens, and bryophytes that live within or atop the uppermost millimeters of soil.

## C

**Candidate species:** Plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Separate lists for plants, vertebrate animals, and invertebrate animals are published periodically in the *Federal Register* (see BLM 2008d).

**Capacity:** The ability of a soil to hold water, or the yield of a pump, well, or reservoir.

**Carrying capacity:** The maximum number of individuals (e.g., cows, sheep, or a particular wildlife species) that an area of land can support, usually determined by their food requirements. The maximum stocking rate possible without damaging vegetation or related resources. Carrying capacity may vary from year to year in the same area due to fluctuating forage production.

**Casual use:** Activities that do not ordinarily cause appreciable disturbance or damage to the **public lands**, resources, or improvements, and therefore do not require a right-of-way grant or temporary use permit (43 CFR 2800).

**Casual mining or collecting:** A type of **casual use** that generally includes the collecting of geochemical, rock, soil, or mineral specimens using hand tools, hand panning, and non-motorized sluicing. It also generally includes using metal detectors, gold spears, and other battery-operated devices for sensing the presence of minerals, and hand battery-operated dry washers. Casual mining does not include using mechanized earth-moving equipment, truck-mounted drilling equipment, suction dredges, motorized vehicles in areas designated as closed to off-road vehicles,

chemicals, or explosives. It also does not include occupancy or operations where the cumulative effects of the activities result in more than negligible disturbance.

**Chemical vegetation treatment:** Application of herbicides to control invasive species, noxious weeds, or unwanted vegetation.

**Clean Air Act of 1963 and amendments:** Federal legislation governing air pollution control.

**Climate change:** Any significant change in climate variables (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun
- Natural processes within the climate system (e.g., changes in ocean circulation)
- Human activities that change the composition of atmospheric gases (e.g., increased carbon dioxide through burning fossil fuels) or of the earth's surface (e.g., deforestation, reforestation, urbanization, and desertification.).

**Closed:** Generally denotes that an area is not available for a particular use or uses; refers to specific definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 defines "closed" as it relates to off-highway vehicle use, and 43 CFR 8364 defines "closed" as it relates to closure and restriction orders (BLM 2005).

**Collaboration:** A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support for managing public and other lands. This may or may not involve an agency as a cooperating agency.

**Colluvium:** A general term applied to loose and incoherent deposits (colluvial deposits), usually at the foot of a slope or cliff and brought there chiefly by gravity; e.g., talus or cliff debris.

**Colorado State species of concern:** A species designated by Colorado as of State concern, for which the State may develop management strategies. Colorado species of concern are indigenous, native breeding species that are considered to be "at risk" due to declining population trends, threats to their habitats, and/or restricted distribution.

**Comprehensive travel management:** The proactive interdisciplinary planning, on-the-ground management, and administration of travel networks (both motorized and non-motorized) to ensure public access, natural resources, and regulatory needs are considered. It consists of activities such as inventory, planning, designation, implementation, education, enforcement, monitoring, easement acquisition, mapping and signing, and other measures necessary to provide access to **public lands** for a wide variety of uses (including recreational, traditional, casual, agricultural, commercial, and educational uses).

**Condition of approval (COA):** Condition or provision (requirement) under which an application for a permit to drill or sundry notice is approved.

**Confined aquifer:** An aquifer bounded above and below by impermeable beds, or by beds of distinctly lower permeability than that of the aquifer itself; an aquifer containing confined groundwater (see also **Aquifer** and **Groundwater**).

**Conflicting user interactions:** See **Recreation conflict**.

**Congressional grazing guidelines:** The guidelines set forth in Appendix A of the report of the Committee on Interior and Insular Affairs of the House of Representatives accompanying H.R. 2570 of the 101st Congress.

**Consolidation:** Any process whereby loose, soft, or liquid earth materials become firm and coherent; e.g., the cooling of lava or the cementation of sand.

**Contact:** The surface between two types or ages of rock.

**Contamination:** That condition where the concentration level of a pollutant exceeds naturally occurring background levels (CDPHE 2013a).

**Cooperating agency:** An agency that assists the lead Federal agency in developing an EA or EIS. This can be any agency with jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6). Any tribe or Federal, State, or local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency.

**Corridor:** A strip of land that aids in the movement of species between disconnected core areas of their natural habitat.

**Critical habitat:** An area occupied by a threatened or endangered species that has physical and biological features that are 1) essential to the conservation of the species, and 2) may require special management considerations or protection.

**Critically imperiled:** See definition of **Imperiled**.

**Crossing:** Active movement of livestock from one location to another, which is permitted under a crossing permit in accordance with §4130.6-3. A crossing permit may be issued by the authorized officer to any applicant showing a need to cross public land or other land under Bureau of Land Management control, or both, with livestock for proper and lawful purposes. A temporary use authorization for trailing livestock contains terms and conditions for the temporary grazing use that will occur as deemed necessary by the authorized officer.

**Crucial winter range:** That part of the overall big game range where 90 percent of the individuals are located during the average five winters out of 10 from the first heavy snowfall to spring green-up, or during a site-specific period of winter as defined for each Colorado Division of Wildlife data analysis unit.

**Cultural resource:** A culturally significant item or place of human activity, occupation, or use. Cultural resources include archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and locations of traditional cultural or religious importance to specified social or cultural groups.

**Cultural resource inventory:** A procedure to assess the potential presence of cultural resources. There are three classes of surveys:

- **Class I:** An existing data survey. This is an inventory of a study area to 1) provide a narrative overview of cultural resources by using existing information, and 2) compile existing cultural resource site record data on which to base the development of the BLM's site record system.
- **Class II:** A field inventory designed to locate, from surface and exposed profile indications, all cultural resource sites within a portion of an area so that an estimate can be made of the cultural resources for the entire area.

- **Class III:** An intensive field inventory designed to locate, from surface and exposed profile indications, all cultural resource sites in an area. Upon its completion, no further cultural resources inventory work is normally needed.

**Cultural site use allocation:** A category assigned to each cultural resource within the planning area, as directed by BLM Manual 8110, that indicates the type of use appropriate for that resource (BLM 2004a). Each resource is assigned to at least one of the following:

- **Scientific Use**—applies to a cultural property determined to be available for scientific or historical study using currently available research techniques or to be preserved until the research potential is realized.
- **Conservation for Future Use**—reserved for unique cultural properties, those that are unusually scarce, have significant data that cannot be removed with current technology, have singular historic or other importance, and can be “banked” for future scientific or historic study.
- **Traditional Use**—applies to a cultural resource known to be perceived by a specified social and/or cultural group as important in maintaining their cultural identity, heritage, or well-being.
- **Public Use**—applies to a cultural property that has qualities useful for on-site interpretation or for other related educational and recreational uses by the general public.
- **Experimental Use**—applies to a cultural property determined to be suitable for controlled experimental study to improve management techniques.
- **Discharged from Management**—assigned to a cultural property with no remaining identifiable use. No cultural resources may be removed from management before documentation, but many kinds of sites may be removed following the appropriate level of documentation and/or study.

**Cumulative effects:** The direct and indirect effects of a proposed project alternative’s incremental impacts when they are added to other past, present, and reasonably foreseeable actions, regardless of who carries out the action.

## D

**Dead-end routes:** Routes that terminate after less than 0.5 miles, do not connect to other routes, and do not lead to points of interest (e.g., established campsites, scenic overlooks, facilities, or developments).

**Decision area:** Lands and Federal mineral estate within the planning area that are administered by the BLM.

**Degraded vegetation:** Areas where the plant community is not complete or is under threat. Examples include areas that have missing components such as perennial forbs or cool season grasses, weed infestations, or lack of regeneration of key species such as sagebrush or cottonwoods trees.

**Desert shrub/saltbush vegetation type:** The desert shrub/saltbush plant community commonly occurs on saline and other droughty soils in the driest portions of the D-E NCA below 6,000 feet and occupies 21 percent of the D-E NCA. The following shrubs characterize this drought-tolerant vegetation type: shadscale (*Atriplex confertifolia*), Gardner saltbush (*Atriplex gardneri*), mat saltbush (*Atriplex corrugata*), black greasewood, four-wing saltbush, black sagebrush (*Artemisia*

*nova*), winterfat (*Krascheninnikovia lanata*), snakeweed (*Gutierrezia sarothrae*), and prickly pear cactus (*Opuntia polyacantha*). These occur in varying amounts, and in various combinations depending on the soil type and disturbance history of the area. Native grasses in this vegetation type include galleta grass (*Pleuraphis jamesii*), bottlebrush squirreltail (*Elymus elymoides*), Salina wild rye (*Leymus salinus*), and Indian ricegrass (*Achnatherum hymenoides*) on sites in better condition. Many different forbs occur, with some of the most common including wild buckwheats (*Eriogonum* spp.), wild onion (*Allium* spp.), and biscuitroot (*Lomatium* and *Cymopterus* spp.).

**Designated roads and trails:** Specific roads and trails identified by the BLM (or other agencies) where some type of use is appropriate and allowed. Within the D-E NCA, designated roads and trails are routes where the BLM has committed to allowing some level or type of use.

**Desired future condition (DFC):** For rangeland vegetation, the condition of rangeland resources on a landscape scale that meet management objectives. It is based on ecological, social, and economic considerations during the land planning process. It is usually expressed as the ecological status or management status of vegetation (species composition, habitat diversity, and age and size class of species) and desired soil qualities (soil cover, erosion, and compaction). In a general context, the desired future condition describes the land or resource conditions that are expected to result if goals and objectives are fully achieved.

**Dip:** The angle that a geological stratum or any planar feature makes with the horizontal, measured perpendicular to the strike and in the vertical plane.

**Disposal:** Transfer of **public land** out of Federal ownership to another party through sale, exchange, the Recreation and Public Purposes Act, Desert Land Entry or other land law statutes.

**Disruptive activity:** A human-caused disturbance that induces stress on a species, population, community, or ecosystem and that causes potential loss of fitness (survival, reproduction, and recruitment) within crucial habitats or other sensitive areas during specified time periods; it may or may not entail surface disturbance. This does not include regular background levels of activity (such as hiking or livestock grazing) to which individual animals are accustomed. Examples of disruptive activities are the following:

- Commercial recreational activities, especially with large groups of people.
- Abnormally loud or sustained noise.
- Road maintenance.

## E

**Early detection/rapid response:** Considered the second line of defense after prevention, early detection and rapid response (EDRR) is a critical component of any effective invasive species management program. When new invasive species infestations are detected, a prompt and coordinated containment and eradication response can reduce environmental and economic impacts. This action results in lower cost and less resource damage than implementing a long-term control program after the species is established.

**Easement:** A right given to a person or agency to make limited use of someone else's real property.

**Ecological site:** A category of land having a unique combination of potential natural community, soil, landscape features, and climate; and differing from other kinds of land in its ability to produce vegetation and respond to management (BLM 2001e).

**Ecological site description:** A detailed assessment of an Ecological Site (see definition) that describes the properties of that site and is used as a standard or reference for resource evaluations such as trend, growth-production, and rangeland health assessments.

**Eligibility:** In the context of wild and scenic rivers, this term means the qualification of a river for inclusion into the National Wild and Scenic Rivers System through the determination that it is free-flowing, and with its adjacent land area, possesses at least one river-related value considered to be outstandingly remarkable (from BLM Manual 8351—*Wild and Scenic Rivers—Policy and Program Direction*); in the context of cultural resources, this term means that a cultural property meets the National Register criteria.

**Emergency stabilization (ES):** Planned actions to stabilize and prevent unacceptable degradation from the effects of a fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources. Emergency stabilization actions must be taken within one year following containment of a wildfire.

**Endangered species:** Any species that is in danger of extinction throughout all or a significant portion of its range and is so designated by the Secretary of the Interior in accordance with the 1973 Endangered Species Act.

**Environmental impact statement (EIS):** A detailed statement prepared by the responsible official in which a major Federal action that significantly affects the quality of the human environment is described, alternatives to the proposed action are provided, and effects are analyzed (BLM 2001a).

**Ephemeral:** A stream that flows only in direct response to precipitation, and whose channel is at all times above the water table (BLM 1998a). Confusion over the distinction between intermittent and ephemeral streams may be minimized by applying Meinzer's (1923) suggestion that the term "intermittent" be arbitrarily restricted to streams that flow continuously for periods of at least 30 days and the term "ephemeral" be arbitrarily restricted to streams that do not flow continuously for at least 30 days (Meinzer 1923).

**Erosion:** Detachment and movement of soil from the land by wind, water, or gravity.

**Exchange:** A transaction whereby the Federal Government receives land or interests in land in exchange for other land or interests in land.

**Exclosure:** In a grazing context, a limited area from which livestock (and sometimes wildlife) are excluded by fencing.

**Exemplary (vegetation):** An area of vegetation that does not show signs of degradation and that may serve as a standard to illustrate what the vegetation potential is for a given type of environment. Exemplary vegetation meets A-ranked viability criteria as described by the CNHP.

**Existing routes:** The roads, trails, or ways that are used by motorists (on jeeps, ATVs, motorized dirt bikes, etc.), users with non-motorized, mechanized devices (e.g., mountain bikers and hunters using game carts), pedestrians (hikers), and/or equestrians (horseback riders) and were, to the best of the BLM's knowledge, in existence at the time that the BLM finalized its D-E NCA



route inventory in the summer of 2011. See also **Mechanical equipment**, **Mechanized travel** and **Motorized travel**.

**Extensive recreation management area (ERMA):** An administrative unit that requires specific management consideration in order to address recreational use, demand, or program investments in recreation and visitor services. See also **Public Land**.

## F

**Federal Land Policy and Management Act of 1976 (FLPMA):** Public Law 94-579, issued October 21, 1976, often referred to as the BLM's "Organic Act," that provides most of the BLM's legislated authority, direction policy and management guidance.

**Federal protection components:** As described in Section 3 and 12 of the National Trails System Act, selected high potential historic sites and high potential route segments and other land- and water-based components of a designated national historic trail located on federally owned land which meet the national historic trail criteria listed in the National Trails System Act and are identified in trailwide comprehensive plans, resource management plans, and implementation plans.

**Firearm:** A weapon, especially a portable gun or pistol, from which a projectile can be discharged by an explosion caused by igniting gunpowder.

**Fire regime condition class (FRCC):** A classification of the amount of departure of conditions at a given time period (such as current or future) from ecological reference (historical) conditions. Pre-settlement ecosystems are commonly used as a benchmark for reference conditions and include possible Native American influence in the natural fire regime. The FRCC system uses three condition classes to signify low, moderate, or high departure from the natural fire regimes and associated vegetation.

**Fire suppression:** Management action to extinguish a fire or confine fire spread beginning with its discovery.

**Flow regime:** The characteristic pattern and volume of flow of a river. Five critical components of the flow regime regulate ecological processes in river ecosystems: magnitude, frequency, duration, timing, and rate of change of hydrologic conditions.

**Forage:** All browse and herbaceous foods that are available to grazing animals.

**Forb:** A herbaceous plant that is not a grass, sedge, or rush.

**Fossil:** The remains (e.g., skeleton or bones) or trace (e.g., tracks) of a prehistoric organism. See also **Invertebrate**, **Trace fossil**, and **Vertebrate**.

### **Fragile soils:**

1. Soils rated as highly or severely erodible by wind or water, as described in NRCS soil survey reports.
2. Soils on slopes over 35 percent, particularly if they have one of the following features:

- a. Surface texture is characterized as sand, loamy sand, very fine sandy loam, fine sandy loam, silty clay, or clay.
- b. Depth to bedrock is less than 20 inches.;
- c. Erosion hazard rating is high or very high.
- d. K-factor (soil erodibility potential) is more than 0.32.

**Functional groups:** A group of plant species that, because of similar shoot or root structure, rooting depth, woody or non-woody stems, plant height, photosynthetic pathways, nitrogen fixing ability, life cycle, etc., have similar roles or functions in the ecosystem and are grouped together on an ecological site basis.

**Functioning at risk:** 1) Condition in which vegetation and soil are susceptible to losing their ability to sustain naturally functioning biotic communities. Human activities, past or present, may increase the risks. 2) Uplands or riparian-wetland areas that are properly functioning, but a soil, water, or vegetation attribute makes them susceptible to degradation and lessens their ability to sustain natural biotic communities. Uplands are particularly at risk if their soils are susceptible to degradation. Human activities, past or present, may increase the risks (BLM 2001a). See also **Properly (or proper) functioning condition**.

## G

**Geologic hazard survey:** A geologic hazard is a natural geologic event that can endanger human lives and threaten human property. Earthquakes, landslides, sinkholes, and volcanoes are all types of geologic hazards. A geologic hazard survey would identify such risks.

**Goal:** A broad statement of a desired outcome; usually not quantifiable and which may not have established time frames for achievement. For the D-E NCA, goals are generally derived from the Omnibus Act of 2009 and BLM policy guidance.

**Grass bank:** A parcel of land for which a term livestock grazing permit has not been issued but which is available for livestock grazing authorization under special circumstances. Those circumstances may include but are not limited to instances where livestock grazing on permitted allotments is not available in a given year due to drought conditions or post fire rehabilitation and/or vegetation treatment grazing deferrals.

**Grazing allotment:** An area of land designated for grazing of livestock. An allotment generally consists of Federal land but may include parcels of private or State-owned land.

**Grazing permit/license/lease:** a document authorizing use of the public lands within an established grazing district (or outside of an established grazing district for a lease). Grazing permits specify all authorized use including livestock grazing, and suspended use. Permits specify the total number of AUMs apportioned, the area authorized for grazing use, or both.

**Grazing preference:** A superior or priority position against others for the purpose of receiving a grazing permit or lease. This priority is attached to base property owned or controlled by a permittee/lessee.

**Grazing system:** Scheduled grazing use and non-use of an allotment to reach identified goals or objectives by improving the quality and quantity of vegetation.

**Groundwater:** Subsurface waters in a zone of saturation that are or can be brought to the surface of the ground or to surface waters through wells, springs, seeps, or other discharge areas (CDPHE 2013a).

## H

**Habitat:** An environment that meets a specific set of physical, biological, temporal or spatial characteristics that satisfy the requirements of a plant or animal species or group of species for part or all of their life cycle.

**Habitat fragmentation:** The degree to which an area of habitat is divided into smaller patches of habitat as a result of human activities and developments (e.g., trails, roads, and fencing) or as a result of natural barriers (e.g., cliffs and rivers).

**Habitat management plan (HMP):** A written and approved activity plan for a geographical area that identifies habitat management activities to be implemented in achieving specific objectives of planning decisions.

**Hand tools:** Tools that are non-mechanical and non-motorized, i.e., that are operated by means of manual labor and not powered by electricity or other power source (e.g., brushes, trowels, shovels, hammers, tweezers, and plum lines).

**Health:** The degree to which the integrity of the soil, water, ecological, and life history processes of vegetation communities and plant and animal populations are sustained.

**Heritage areas:** Places where natural, cultural, and historic resources combine to form a cohesive, important landscape. Characterized by distinctive natural, cultural, historic, and scenic resources that, when linked together, tell a unique story.

**Heritage tourism:** Tourism that emphasizes experiencing the places, artifacts, and activities that authentically represent the stories and people of the past and present.

**Hibernacula:** Hibernation site, overwintering site, refugia or den for bats and snakes.

**Historical occurrence:** When a plant or animal species is known to have existed at a particular location but is no longer found at that location, or its current status at that location is unknown.

**Historical significance:** A quality attributed to a site that has been evaluated and found to meet criteria set by the National Register of Historic Places.

**Hydraulic gradient:** In an aquifer, the rate of change of total head per unit of distance of flow at a given point and in a given direction.

**Hydrograph:** A graph of the water level or rate of flow of a body of water as a function of time, showing the seasonal change.

## I

**Indicator:** A measure of the health of a species or vegetative/habitat type. Indicators are often quantifiable.

**Infiltration and permeability rate:** The infiltration rate is the rate at which water penetrates the surface of the soil at any given moment, usually expressed in inches per hour. Permeability is the relative ease (or lack thereof) with which water moves downward through soil. Permeability is measured in inches per hour. Land Health Standard I is designed to ensure soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes.

**Imperiled:** A system of ranking, based on CNHP terminology, that defines the rarity of a species or natural community; this system includes three ranks as follows:

- *critically imperiled* (typically five or fewer occurrences, or 1,000 or fewer individuals);
- *imperiled* (typically six to 20 occurrences, or 1,000 to 3,000 individuals);
- *vulnerable* (rare; typically 21 to 100 occurrences or 3,000 to 10,000 individuals); either very rare and local throughout its range, or vulnerable to elimination throughout its range due to specific factors).

**Implementation decisions:** Decisions that take action to implement land use planning; generally appealable under 43 CFR 4.410. These decisions are generally more site-specific than land-use plan decisions.

**Implementation plan:** An area or site-specific plan written to implement decisions made in a land use plan. Implementation plans include both activity plans and project plans. Examples of implementation plans include interdisciplinary management plans, habitat management plans, and allotment management plans.

**Intact vegetation:** An area where vegetation exhibits “good” or “very good” indicators of health (see Appendix A).

**Integrated pest management (IPM):** ) A balanced approach to weed management that includes the following processes:

- Managing the resource to prevent weeds from invading
- Proper identification and knowledge of invasive weed species
- Inventory, mapping out and monitoring of weed populations and damage
- Making control decisions based on knowledge of potential damage, cost of control method and environmental impact of the weed and control decision
- Using control strategies that may include a combination of methods to reduce the weed population to an acceptable level
- Evaluating the effectiveness and effects of management decisions

**Intermittent stream:** A stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas. During the dry season and throughout minor drought periods, these streams will not exhibit flow. Geomorphologic characteristics are not well defined and are often inconspicuous. In the absence of external limiting factors (pollution, thermal modifications, etc.), biological resources are scarce and adapted to the wet and dry conditions of the fluctuating water level (BLM 1998a). Confusion over the distinction between intermittent and ephemeral streams may be minimized by applying

Meinzer's (1923) suggestion that the term "intermittent" be arbitrarily restricted to streams that flow continuously for periods of at least 30 days and the term "ephemeral" be arbitrarily restricted to streams that do not flow continuously for at least 30 days. Also, the intermittent stream is to be distinguished from an interrupted stream, which is a stream with discontinuities in space. Intermittent or seasonal streams usually have visible vegetation or physical characteristics reflective of permanent water influence; for example, the presence of cottonwood (Meinzer 1923).

**Interpretive site:** Site or facility for the interpretation of cultural, historical, paleontological, geological, and/or biological information. Includes internet sites, printed brochures, information kiosks and on-site presentations of information.

**Invasive Weed:** A non-native plant that is interfering with management objectives.

**Invertebrate:** An animal lacking a backbone or spinal column, such as an insect, snail, clam, crayfish, or worm.

## L

**Land tenure adjustments:** Ownership or jurisdictional changes, including the acquisition of non-Federal lands through purchase or donation, are referred to as "land tenure adjustments." To improve the manageability of the BLM lands and improve their usefulness to the public, the BLM has numerous authorities for "repositioning" lands into a more consolidated pattern, disposing of lands, and entering into cooperative management agreements. These land pattern improvements are completed through the use of land exchanges, land purchases, land sales and jurisdictional transfers to other agencies, and through the use of cooperative management agreements and leases.

**Land use allocation:** The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the planning area, based on **desired future conditions** (see definition in this glossary) (BLM 2005).

**Land use plan:** A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of **FLPMA** (see definition); an assimilation of land-use-plan level decisions developed through the planning process outlined in 43 CFR 1600, regardless of the scale at which the decisions were developed. The term includes both RMPs and MFPs (BLM 2005).

**Land use plan decision:** Establishes desired outcomes and actions needed to achieve them. Decisions are reached using the planning process in 43 CFR 1600. When they are presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appealable to the Interior Board of Land Appeals.

**Late season grazing:** Fall or late summer grazing.

**Lease:** Section 302 of **FLPMA** provides the BLM with authority to issue leases for the use, occupancy, and development of **public lands**. Leases are issued for purposes such as a commercial filming, advertising displays, commercial or noncommercial croplands, apiaries, livestock holding or feeding areas not related to grazing permits and leases, harvesting of native or introduced species, temporary or permanent facilities for commercial purposes (does not include mining claims), residential occupancy, ski resorts, construction equipment storage sites, assembly yards, oil rig stacking sites, mining claim occupancy if the residential structures are not incidental to the mining operation, and water pipelines and well pumps related to irrigation

and non-irrigation facilities. The regulations establishing procedures for the processing of these leases and permits are found in 43 CFR 2920.

**Lek:** An assembly area where birds, particularly sage-grouse, carry on display and courtship behavior.

**Lentic riparian wetlands:** Wetlands that are associated with still water systems; occur in basins, on slopes or on flats; and lack a defined channel and floodplain.

**Limited area:** Designated areas and trails where the use of off-road vehicles is subject to restrictions, such as limiting the number or types of vehicles allowed, dates and times of use (seasonal restrictions), limiting use to existing roads and trails, or limiting use to designated roads and trails. Under the designated roads and trails designation, use would be allowed only on roads and trails that are signed for use. Combinations of restrictions are possible, such as limiting use to certain types of vehicles during certain times of the year (BLM 2001a).

**Lithic site:** An archaeological site containing debris left from the manufacture, use, or maintenance of flaked stone tools.

**Locally derived plant materials:** Plant materials (seeds, cuttings, etc.) derived from similar elevations, habitat types and soils within the D-E NCA's EPA ecoregion.

**Long-term effect:** An effect that could occur for an extended period after implementation of the alternative and could last several years or more.

**Lotic riparian wetlands:** Wetlands that are associated with running water systems, contain a defined channel and floodplain, and have an open-conduit channel carrying flowing water and dissolved and suspended material.

## M

**Management decision:** A decision made by the BLM to manage **public lands**. Management decisions include both land use plan decisions and implementation decisions.

**Maternity roost sites:** Location where female bats bear and raise their young.

**Mechanical vegetation treatment:** Includes mowing, chaining, chopping, drill seeding, and cutting vegetation to meet resource objective. Mechanical treatments generally occur in areas where fuel loads or invasive species need to be reduced prior to prescribed fire application; when fire risk to resources is too great to use naturally started wildland fires or prescribed fires; or where opportunities exist for biomass utilization or timber harvest.

**Mechanical equipment:** Power tools (i.e., not **hand tools**—see definition) that are used outside wilderness areas on archaeological and paleontological digs, including (but not limited to) pneumatic air scribes, diamond saws, large construction drills, and delicate dental drills.

**Mechanized travel:** Moving by means of a mechanical device, such as a bicycle; not powered by a motor (BLM 2011c).

**Metamorphic rock:** Any rock derived from pre-existing rocks by mineralogical, chemical, and/or structural changes, essentially in the solid state, in response to marked changes in

temperature, pressure, shearing stress, and chemical environment that generally occur at depth in the earth's crust.

**Minimum impact suppression tactics (MIST):** The application of strategy and tactics that effectively meet suppression and resource objectives with the least environmental, cultural and social impacts.

**Mitigation:** In general, a combination of measures to lessen the impacts of a project or activity on an element of the natural environment or various other cultural or historic values; more specifically, as defined by the Council on Environmental Quality in its regulations for implementing NEPA, mitigation includes the following: (a) avoiding the impact; (b) minimizing the impact; (c) rectifying (i.e., repairing, rehabilitating, or restoring) the impact; (d) reducing or eliminating the impact through operations during the life of the project; or (e) compensating by replacing or substituting resources (40 CFR Section 1508.20).

**Monitoring (plan monitoring):** The process of tracking the implementation of land use plan decisions and collecting and assessing the data necessary to evaluate the effectiveness of land use planning decisions.

**Mountain shrub vegetative community:** A plant community that occurs at elevations ranging from 7,000 to 9,000 feet and makes up 5.1 percent of the D-E NCA. Birchleaf mountain mahogany (*Cercocarpus betuloides*), Utah serviceberry (*Amelanchier utahensis*), and Gambel's oak (*Quercus gambelii*) are prominent components. Soils, slope, aspect, and fire history influence the character and distribution of this plant community. Common herbaceous species include elk sedge (*Carex geyeri*), Letterman's needlegrass (*Acnatherum lettermanii*), Kentucky bluegrass (*Poa pratensis*), muttongrass (*Poa fendleriana*), Sandberg bluegrass (*Poa secunda*), bottlebrush squirreltail (*Elymus elymoides*), western wheatgrass (*Pascopyrum smithii*), slender wheatgrass (*Elymus trachycaulus*), and nodding brome (*Bromus anomalus*). Forbs are numerous, with many species present. Among the most widespread and dominant are western yarrow (*Achillea millefolium*), lupine (*Lupinus* spp.), biscuitroot (*Lomatium* spp.), and aspen peavine (*Lathyrus lanzwertii*). BLM sensitive species that occupy this vegetative community include sharp-tailed grouse. Big game like elk and deer also use this vegetative community within the D-E NCA.

**Motorcycle:** A **motorized vehicle** (see definition) with two tires and a seat designed to be straddled by the operator.

**Motorized vehicle:** Any vehicle that is self-propelled, including but not limited to jeeps, ATVs (such as four-wheelers and three-wheelers), snow machines or snowmobiles, and trail motorcycles or dirt bikes.

**Multiple use:** The management of the **public lands** and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to

the combination of uses that will give the greatest economic return or the greatest unit output (from **FLPMA**; see also BLM 2008d).

## N

**National Environmental Policy Act of 1969 (NEPA):** A law that established a national policy to maintain conditions under which humans and nature can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations of Americans. It established the Council on Environmental Quality for coordinating environmental matters at the Federal level and to serve as the advisor to the president on such matters. The law made all Federal actions and proposals that could have significant impact on the environment subject to review by Federal, State, and local environmental authorities.

**National Forest System (NFS) lands:** Forests and grasslands managed by the USFS.

**National Historic Preservation Act as amended (NHPA):** 1966 legislation establishing the National Register of Historic Places and extending the national historic preservation programs to properties of State and local significance.

**National historic trail (NHT):** A congressionally designated trail that is an extended, long-distance trail, not necessarily managed as continuous, that follows as closely as possible and practicable the original trails or routes of travel of national historic significance. The purpose of a national historic trail is the identification and protection of the historic route and the historic remnants and artifacts for public use and enjoyment. A national historic trail is managed in a manner to protect the nationally significant resources, qualities, values, and associated settings of the areas through which such trails may pass, including the primary use or uses of the trail. The Old Spanish NHT is a national historic trail.

**National Register of Historic Places (NRHP):** Official inventory of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering and culture.

**National Register District:** a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.

**National Wild and Scenic Rivers System (NWSRS):** A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition. The system consists of three types of streams: 1) *recreational*: rivers or sections of rivers that are readily accessible by road or railroad and that may have some development along their shorelines and may have undergone some impoundments or diversion in the past, 2) *scenic*: rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped but accessible in places by roads, and 3) *wild*: rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.

**Native vegetation:** Plant species that were found here prior to European settlement and are consequently in balance with these ecosystems, because they have well developed parasites, predators, and pollinators.



**Naturalness:** The quality of an area that “generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable” (Section 2[c] of the Wilderness Act of 1964). In the Dominguez Canyon Wilderness, naturalness is defined using the indicators for priority species and vegetation (see Appendix G).

**Natural processes:** Natural, unplanned wildland fire, drought, insect, and disease outbreaks; flooding, and other events that occurred prior to European settlement and shaped vegetation composition and structure.

**Natural regeneration:** The growth of trees (or other plants) from seeds, roots or bulbs, without cultivation by humans.

**Nature and purposes** (as it relates to national historic trails): The term used to describe the character, characteristics, and congressional intent for a designated national trail, including the resources, qualities, values, and associated settings of the areas through which such trails may pass; the primary use or uses of a national trail; and activities promoting the preservation of, public access to, travel within, and enjoyment and appreciation of national trails.

**Nested management:** A management approach that assumes the health of a specific species is dependent on the health of the habitat occupied by that species. Under this approach, management is focused on the habitat, instead of the particular species.

**Non-native aquatic organisms:** Aquatic species, such as Quagga or Zebra mussels, that are not indigenous to an area and that threaten native aquatic species.

**Noxious weeds:** A plant species designated by Federal or State law as being generally one or more of the following: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or non-native, new, or not common to the United States.

## O

**Objective:** A description of a **desired condition** (see definition) for a resource. Objectives can be quantified and measured, and where possible, have established time frames for achievement.

**Occurrence:** A known location of an individual or population of individuals of a plant or animal species.

**Off-highway vehicle (OHV):** Any **motorized vehicle** (see definition) capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding the following: 1) any non-amphibious registered motorboat; 2) any military, fire, emergency, or law enforcement vehicle while it is being used for emergency purposes; 3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; 4) vehicles in official use; and 5) any combat or combat support vehicle when used for national defense (BLM 2005).

**Off-highway vehicle area designations.** BLM-administered lands in the GJFO are designated as open, limited, or closed for **OHV** use:

- **Open:** Designated areas where all types of motorized vehicles (jeeps, ATVs, motorized dirt bikes, etc.) are permitted at all times, anywhere in the area, on roads or cross country, subject to the operating regulations and vehicle standards set forth in 43 CFR subparts 8341 and 8342.

- **Limited:** Designated areas where motorized vehicles are restricted to designated routes. Off-road, cross-country travel is prohibited in limited areas, unless an area is specifically identified as an area where cross-country over-snow travel is allowed. Some existing routes may be closed in limited areas.
- **Closed:** Designated areas where off-road motorized vehicle travel is prohibited throughout the year. Yearlong emergency use of vehicles is allowed.

**Off-site education and interpretation:** Educational activities or programs that occur outside of the area where a cultural or other resource is located. May include a website, social media, printed brochures and maps.

**Off-site mitigation:** Refers to treatments that attempt to restore a comparable area of similar vegetation/habitat to the same condition and amount of vegetation/habitat being affected by a project or allowable use. See also **Mitigation**, (e).

**Old growth forest stands:** Stands composed of trees that are generally in the late successional stages of development. The desired attributes of old-growth stands are older, large trees for the species and site; signs of decadence (broken or deformed tops or boles and some root decay); multiple layers of canopy; standing and downed dead trees; a variation in tree age, size, and spacing; and gaps or patchiness in the canopy and understory (Mehl 1992). Old growth characteristics can start at 200 years on some sites.

**On-site education and interpretation:** Educational activities or programs that occur inside the area where a cultural or other resource is located. May include kiosks and information plates.

**Open:** Designated areas and trails where off-road vehicles may be operated, subject to operating regulations and vehicle standards set forth in BLM Manuals 8341 and 8343, or an area where all types of vehicle use is permitted at all times, subject to the standards in BLM Manuals 8341 and 8343.

**Ordinary high-water mark:** That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a conspicuous, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate characteristics of the surrounding area.

**Organized Group:** More than one person participating in a recreational activity or event.

**Outstanding geological feature:** A geologic feature (e.g., arch, hoodoo, monument, ripple marks, etc.) having uncommon, rare, or exceptional aesthetic, educational or scientific value.

**Outstandingly remarkable values (ORVs):** Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act: “scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values.” Other similar values may include ecological, biological, botanical, paleontological, hydrological, scientific, or research values.

**Overstory:** That portion of a plant community consisting of the taller plants on the site; the forest or woodland canopy.

## P

**Paleontological resources:** Any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth. Paleontological resources do not include any materials associated with an archaeological resource or any cultural item (16 U.S.C. 470aaa(4)).

**Particulate matter (PM):** One of the six “criteria” pollutants for which the U.S. EPA established the National Ambient Air Quality Standards. Particulate matter falls into two categories: fine particulates with an aerodynamic diameter of 10 micrometers (PM<sub>10</sub>) or less, and fine particulates with an aerodynamic diameter of 2.5 micrometers or less (PM<sub>2.5</sub>).

**Perennial plant species:** A plant that has a life cycle of three years or more.

**Perennial stream:** Streams that flow continuously throughout the year, regardless of weather conditions. Perennial streams are generally associated with a water table in the localities through which they flow.

**Permeability:** The capacity of a porous rock, sediment, or soil for transmitting a fluid; it is a measure of the relative ease of fluid flow under unequal pressure. The customary unit of measurement is the millidarcy (mD). Such a rock, sediment, or soil is said to be permeable.

**Permitted use:** In a livestock grazing context, the use of forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease, and expressed in AUMs (see definition).

**Permittee:** In a livestock grazing context, a person or company permitted to graze livestock on public land.

**Petroglyph:** A form of rock art created by incising, scratching or pecking designs into rock surfaces.

**Pictograph:** A form of rock art created by applying mineral-based or organic paint to rock surfaces.

**Pinyon-juniper woodland vegetative community:** The pinyon-juniper woodland vegetative community occurs between 5,800 and 7,500 feet and occupies more of the D-E NCA (61 percent) than any other vegetation type. The pinyon-juniper woodland is dominated by Utah juniper (*Juniperus osteosperma*) and Colorado pinyon pine (*Pinus edulis*) in varying proportions, depending on soil, slope aspect, and elevation. There is typically a sparse and variable understory that may contain remnant shrubs like Wyoming big sagebrush (*Artemisia tridentata wyomingensis*), birchleaf mountain mahogany (*Cercocarpus betuloides*), Utah serviceberry (*Amelanchier utahensis*), snakeweed (*Gutierrezia sarothrae*), and yucca (*Yucca harrimaniae*). Common herbaceous understory species include muttongrass (*Poa fendleriana*), Indian ricegrass (*Achnatherum hymenoides*), and bottlebrush squirreltail (*Elymus elymoides*). Primary forbs in this type are western tansy mustard (*Descurainia pinnata*), scarlet globemallow (*Sphaeralcea coccinea*), rock goldenrod (*Petradoria pumila*), lobeleaf groundsel (*Packera multilobata*), and numerous species of *Penstemon*, *Arabis*, *Astragalus*, *Lomatium*, *Erigeron*, and *Machaeranthera*.

**Planning area:** A geographic area for which land use and resource management plans are developed and maintained.

**Planning criteria:** The standards, rules and other factors developed by managers and interdisciplinary teams to use in making judgments about decisions, analyses, and data collection

during planning. Planning criteria streamlines and simplifies the resource management planning actions.

**Planning issue:** A matter that causes concern, conflict, or debate regarding the existing management of **public lands**. Frequently, issues are based on how land uses affect resources. Some issues are concerned with how land uses can affect other land uses, or how the protection of resources affects land uses.

**Plant Materials:** Materials derived from plants or vegetation, including firewood (fuelwood), posts and poles, wildings and boughs.

**Ponderosa pine vegetative community:** The ponderosa pine vegetative community occupies a small portion of the D-E NCA (0.4 percent). Soils, climate and fire history influence where this community is found and influence the understory vegetation found beneath the canopy of ponderosa pine. Many of the mountain shrub species are also found in this vegetative community. The more common species include birchleaf mountain mahogany (*Cercocarpus montanus*), Utah serviceberry (*Amelanchier utahensis*), Gambel's oak (*Quercus gambelii*), Rocky Mountain juniper (*Juniperus scopulorum*), black chokecherry (*Prunus virginiana*), and roundleaf snowberry (*Symphoricarpos rotundifolius*).

**Potential fossil yield category (PFYC):** A classification system that aids in assessing the potential for discovery of significant paleontological resources or the impact of surface disturbing activities to these resources. This classification system was originally developed in 1996 by the Forest Service's Paleontology Center of Excellence and the Forest Service Region 2 Paleontology Initiative.

**Prehistoric resources:** Any material remains, structures, and items used or modified by people before Euroamericans established a presence in the region.

**Prescribed fire treatment:** A wildland fire originating from a planned ignition to meet specific objectives identified in a written, approved, prescribed fire plan for which NEPA requirements (where applicable) have been met prior to ignition.

**Primitive and unconfined recreation:** Non-motorized, non-mechanized (except as provided by law), and undeveloped types of recreational activities (BLM 2012a). Bicycles are considered mechanized transport (see **motorized vehicle** and **mechanized travel**).

**Primitive road:** A linear route managed for use by four-wheel-drive or high-clearance vehicles. Primitive roads do not normally meet any BLM road design standards.

**Pristine (vegetation):** An area of vegetation that does not show signs of degradation and that may serve as a comparison to illustrate what the vegetation potential is for a given type of environment. Pristine vegetation meets the *exemplary* criteria described by the CNHP.

**Properly (or proper) functioning condition (PFC):** 1) An element of the Fundamental of Rangeland Health for watersheds, and therefore a required element of State or regional standards and guidelines under 43 CFR § 4180.2(b). 2) Condition in which vegetation and ground cover maintain soil conditions that can sustain natural biotic communities. For riparian areas, the process of determining function is described in BLM Technical Reference 1737–9 (BLM 1998a). 3) Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain

development; improve floodwater retention and groundwater recharge; develop root masses that stabilize stream banks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is influenced by geomorphic features, soil, water, and vegetation. 4) Uplands function properly when the existing vegetation and ground cover maintain soil conditions capable of sustaining natural biotic communities. The functioning condition of uplands is influenced by geomorphic features, soil, water, and vegetation (BLM 2001b).

**Public land:** Land or interest in land owned by the United States and administered by the Secretary of the Interior through the BLM without regard to how the United States acquired ownership, except lands located on the Outer Continental Shelf, and lands held for the benefit of Indians, Aleuts, and Eskimos. Public lands not designated as recreation management areas are all lands not established as an **SRMA** or **ERMA** (see definitions). These lands are not designated as RMAs and are managed to meet basic resources and values and resource stewardship needs. Recreation is not emphasized; however, recreational activities may occur except on those lands closed to public use. The resources and values are managed to allow recreational uses that are not in conflict with the primary uses of these lands.

## R

**Range improvement project.** An authorized physical modification or treatment that is designed to improve production of forage; change vegetation composition; control patterns of use; provide water; stabilize soil and water conditions; and restore, protect and improve the condition of rangeland ecosystems to benefit livestock, wild horses and burros, and fish and wildlife. This definition includes, but is not limited to, structures, treatment projects and use of mechanical devices, or modifications achieved through mechanical means (see **mechanical equipment**).

**Raptor:** Bird of prey with sharp talons and strongly curved beak; e.g., hawk, owl, vulture, and eagle.

**Rare vegetation communities:** Unique combinations of plant species as identified by terminology and a classification system from the CNHP. These are defined using CNHP's global rarity ranks, denoting degree of scarcity on a global level.

**Recharge:** The process by which groundwater is replenished through precipitation (rain and snow) and subsequent drainage through soil.

**Reclamation:** Returning disturbed lands to a form and productivity that will be ecologically balanced and in conformity with a predetermined land management plan.

**Recreational target shooting:** The lawful discharge of any projectile from a firearm or airsoft gun (a spring, electric, or gas-powered gun that fires a spherical pellet—i.e., BB or pellet gun), including archery, for recreational purposes other than the purpose of the lawful taking of game (hunting). This does not include the use of incendiary and tracer projectiles, which is prohibited under 43 CFR 9212.1. In the D-E NCA, the following are not considered targets for the purpose of recreational target shooting: natural features (except earthen berms or banks used as backstops), vegetation, structures, gates, vehicles, signs, other Federal, State, or local agency improvements, appliances, furniture, glass, pets, service animals, livestock, wildlife, explosive and incendiary items, or garbage of any kind.

**Recreation conflict:** Jacob and Schreyer (1980) defined recreation or user conflict as goal interference that can be attributed to other recreational users. Using this definition, negative user interactions (conflict) occur when one visitor's expectation or experience is diminished, and that visitor can attribute the negative impact to another visitor's behavior.

**Recreation experience:** Immediate states of mind resulting from participation in recreation opportunities that result in benefits (BLM Handbook H-8320-1).

**Recreation opportunity:** The ability to participate in recreation activities that facilitate experiences and benefits within a specific geographic area (BLM Handbook H-8320-1).

**Recreation opportunity spectrum (ROS):** A widely used planning and management framework for classifying and defining recreational environments, from the primitive to the urban, that recognizes the variation among the components of any landscape's physical, social, and operational attributes.

**Recreation setting character or characteristics (RSCs):** A planning and management framework for classifying and defining recreation opportunity environments ranging from the primitive to the urban. This continuum recognizes variation among the components of any landscape's physical, social, and operational attributes (BLM Handbook H-8320-1).

**Recreation setting:** The collective distinguishing attributes of a landscape that influence and sometimes actually determine what kinds of recreation opportunities are available. Recreation settings are classified both in terms of existing conditions (inventory) and **desired future conditions** (planned).

**Recreation use permit:** An authorization to use developed facilities that meet the fee criteria established by the Land and Water Conservation Fund Act of 1964 as amended or subsequent authority (such as the pilot fee demonstration program). Recreation use permits are issued to ensure that U.S. residents receive a fair and equitable return for the use of those facilities to help recover the cost of construction, operation, maintenance, and management of the permits.

**Redundant route:** In the D-E NCA, any route that runs parallel to a preferred, existing route.

**Resource management plan (RMP):** A land use plan as prescribed by **FLPMA** that establishes, for a given area of land, land-use allocations, coordination guidelines for multiple-use, objectives, and actions to be achieved.

**Resources, qualities, and values (as they relate to national historic trails):** The significant scenic, historic, cultural, recreation, natural (including biological, geological, and scientific), and other characteristics of landscape areas through which such trails may pass as identified in the National Trails System Act.

**Restoration:** The process by which areas are brought back to a former, original, or specific desired condition or appearance.

**Revegetation:** The process of putting vegetation back in an area where vegetation previously existed, which may or may not simulate natural conditions.

**Right-of-way (ROW):** Public lands authorized to be used or occupied for specific purposes pursuant to a right-of-way grant, which are in the public interest and which require ROWs over, on, under, or through such lands (e.g., for roads, power lines, and pipelines).

**Right-of-way avoidance area:** An area identified through resource management planning to be avoided but that may be available for ROW location with special stipulations.

**Right-of-way exclusion area:** An area identified through resource management planning that is not available for ROW location under any conditions.

**Riparian area:** A form of wetland transition between permanently saturated wetlands and upland areas. Riparian areas exhibit vegetation or physical characteristics that reflect the influence of permanent surface or subsurface water. Typical riparian areas include lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels. Excluded are ephemeral streams or washes that lack vegetation and depend on free water in the soil.

**Riparian zone:** An area one-quarter mile wide encompassing riparian and adjacent vegetation.

**Road:** A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.

**Roadless:** The absence of roads that have been constructed and maintained by mechanical means to ensure regular and continuous use.

**Rock art:** Petroglyphs (carvings) or pictographs (paintings) created on natural rock surfaces by native people and depicting their history and culture.

**Routes:** Used generically to describe linear transportation features. Includes roads, primitive roads, and trails.

**Route density:** Linear miles of trails and roads per square mile. This concept has different applications when planning for wildlife habitat or recreation.

## S

**Sagebrush shrublands vegetative community:** The sagebrush vegetative community is scattered throughout the D-E NCA and occupies 11 percent of the D-E NCA. This vegetation type typically occurs on deeper soils at elevations ranging from 5,000 to 7,500 feet. The sagebrush community is dominated by Basin big sagebrush (*Artemisia tridentata tridentata*) at the lowest elevations, Wyoming big sagebrush (*Artemisia tridentata* Nutt. subsp. *wyomingensis*) at mid elevations, and mountain big sagebrush (*Artemisia tridentata* subsp. *Vaseyana*) at the highest elevations. Black sagebrush (*Artemisia nova*) also occurs as a dominant shrub on some soils across this elevation range. The sagebrush type can also occur on steeper, rockier sites, where it is usually successional to pinyon-juniper woodland vegetative communities and has resulted from removal of the tree canopy by fire or other natural disturbances. Snakeweed (*Gutierrezia sarothrae*), Utah serviceberry (*Amelanchier utahensis*), rabbitbrush (genus *Ericamera* or *Chrysothamnus*), and four-wing saltbush (*Atriplex canescens*) can be secondary shrubs in the sagebrush vegetation type.

The sagebrush vegetation type contains a variable understory that can include western wheatgrass (*Pascopyrum smithii*), galleta grass (*Pleuraphis jamesii*), bottlebrush squirreltail (*Elymus elymoides*), Indian ricegrass (*Achnatherum hymenoides*), blue grama (*Bouteloua gracilis*), Sandberg bluegrass (*Poa secunda*), muttongrass (*Poa fendleriana*), needle-and-thread grass (*Heterostipa comata*), prairie junegrass (*Koeleria macrantha*), and many forbs. Among the most prominent forbs are scarlet globemallow (*Sphaeralcea coccinea*) and longleaf phlox (*Phlox*

*longifolia*). BLM sensitive bird species can be found in this vegetative community and are/have been known to occur within the D-E NCA. These are Gunnison sage-grouse, Brewer's sparrow and sage sparrow. Deer and elk also use sagebrush shrublands, and are important game species in the D-E NCA.

**Salinity:** The level of soluble salts in soil or water.

**Saturated soils:** Soils whose infiltration capacity is exceeded due to rainfall or snowmelt runoff. Soils can also become saturated from groundwater input.

**Scenic river:** A river or section of river that is free of impoundments and whose shorelines are largely undeveloped but accessible in places by roads.

**Scoping process:** An early and open public participation process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.

**Season of use:** In a grazing context, the time during which livestock grazing is permitted on a given range area, as specified in the grazing lease.

**Sedimentary rock:** A layered rock resulting from the consolidation of sediment; e.g., a clastic rock such as sandstone, a chemical rock such as rock salt, or an organic rock such as coal. Some authors include pyroclastic rocks, such as tuff.

**Seeding:** Seeding is the application of grass, forb, or shrub seed to an area, either aerially or from the ground. In areas of gentle terrain, ground applications of seed are often accomplished with a rangeland drill. Seeding allows the establishment of native species or placeholder species and the restoration of disturbed areas to a perennial-dominated cover type, thereby decreasing the risk of subsequent invasion by exotic plant species. Seeding would be used primarily as a follow-up treatment in areas where disturbance or other treatments have already removed exotic plant species and their residue.

**Seeps and springs:** Naturally occurring springs usually emerge from a single point, while seeps emerge over a larger area, having no well-defined origin. In the Uncompahgre Plateau, seeps and springs typically emerge from canyon walls where groundwater encounters an impenetrable rock layer. Unique vegetative communities often form around the discharges of seeps and springs.

**Self-guided exploration:** A type of exploration where the visitor uses internet sites, information kiosks, and/or marked trails with information posted at stations or stops along the way to tour an area. The visitor is guided by the design of the interpretive site rather than by a ranger or docent.

**Sensitive species:** Species designated as sensitive by the BLM State Director, including species that are under status review, have small or declining populations, live in unique habitats, or require special management. BLM Manual 6840 (BLM 2008d) provides policy and guidance for managing special status species.

**Severe winter range:** An area within the winter range of an animal where 90 percent of the individuals are located when annual snow pack is at its maximum and/or temperatures are at a minimum in the two worst winters out of ten.

**Short-term effect:** An effect that occurs only during or immediately after implementation of an action or alternative.

**Site-specific relocation (SSR):** See Appendix B.



**Soil pedestaling:** Where plants or rocks are elevated on pedestals above the soil surface, because the soil has been eroded away from the base of the plant or rock. The height of the pedestal and the degree of root exposure can serve as indicators of the degree of soil loss.

**Solitude:** The experience of being alone or in a place that is remote isolated, or secluded. Factors contributing to opportunities for solitude may include size, natural screening, topographic relief, vistas, physiographic variety, and the ability of the user to find a secluded spot.

**Special recreation management area (SRMA):** An administrative unit where the existing or proposed recreational opportunities and recreational setting characteristics are recognized for their unique value, importance, or distinctiveness; especially when compared to other recreational areas.

**Special recreation permit:** An authorization that allows for recreational use of **public lands** and related waters. Issued as a means to control visitor use, protect recreational and natural resources, and provide for the health and safety of visitors. Commercial special recreation permits are also issued as a mechanism to provide a fair return for the commercial use of public lands.

**Special status species:** Species that are proposed for listing, officially listed as threatened or endangered, or are candidates for listing as threatened or endangered under the provisions of the ESA; species that are listed by a State in a category such as threatened or endangered, implying potential endangerment or extinction; and species that are designated as sensitive by a State director.

**Split estate:** Lands on which the mineral estate is owned by someone other than the owner of the surface estate; for example, where the surface is in private ownership and the mineral resources are publicly held and managed by the Federal Government.

**State Historic Preservation Office (SHPO):** The office in a State or territorial government that administers the preservation programs under the NHPA.

**Stipulation:** A term or condition in an agreement or contract.

**Stocking level:** The number of specific kinds and classes of animals grazing or using a unit of land for a specified time.

**Succession:** The process by which an ecological community naturally changes over time following a disturbance.

**Suitability:** In the context of wild and scenic rivers, a suitable river segment is one that is found, through administrative study by an appropriate agency, to meet the criteria for designation as a component of the National Wild and Scenic Rivers System, as specified in Section 4(a) of the Wild and Scenic Rivers Act.

**Surface-disturbing activities:** Disruptive activities that result in direct and pronounced alteration, damage, removal, displacement, or mortality of vegetation, soil, or substrates. Such activities usually stem from the use of motorized or mechanized vehicles or tools. Examples of surface disturbing activities include the following:

- Earth-moving and drilling
- Geophysical exploration

- Off-route motorized and mechanized travel
- Vegetation treatments including woodland thinning with chain saws
- Pyrotechnics and explosives
- Construction of power lines, pipelines, oil and gas wells, recreation sites, livestock improvement facilities, wildlife ponds, or new roads.

Examples of **casual use** (see definition) and other activities that would not normally be considered surface-disturbing activities are as follows:

- Horseback riding
- Proper livestock grazing
- Cross-country hiking
- Hand-spraying weeds
- Minimal trimming of vegetation to maintain ROWs
- Motorized and mechanized travel on designated routes
- Maintenance of permitted areas under **valid existing rights** (see definition).

**Sustained yield:** The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the **public lands** consistent with multiple use.

## T

**Threatened species:** Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, and as further defined by the Endangered Species Act of 1973.

**TMDL:** An acronym for “total maximum daily load.” The TMDL is the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that load among the various sources of that pollutant.

**Total dissolved solids (TDS):** A measure of the amount of substances dissolved in a liquid, usually water.

**Trace fossil:** Prehistoric animal track, track way, mud crack, worm burrow, ripple mark, or other feature in sedimentary rock that records the presence or behavior of the organism that made it.

**Traditional cultural property:** A property that derives significance from traditional values associated with it by a social and/or cultural group such as an Indian tribe or local community. A traditional cultural property may qualify for the National Register if it meets the criteria in 36 CFR 60.4.

**Traditional uses:** Longstanding, socially conveyed, customary patterns of thought, cultural expression, and behavior, such as religious beliefs and practices, social customs, and land or

resource uses. Traditions are shared generally within a social and/or cultural group and span generations. Usually, traditional uses are reserved rights resulting from treaty and/or agreements with Native American groups.

**Trail:** A linear route managed for human-powered, stock or **OHV** (see definition) travel or transportation; or for historical or heritage values; not generally managed for use by four-wheel-drive or high-clearance vehicles.

**Trailing:** Used in the Draft RMP to refer to movement of livestock between grazed areas. Since publication of the Draft RMP, the BLM has clarified policy and corresponding terminology. Trailing is now defined as the active movement of livestock from one location to another, which is permitted under an existing grazing permit and is conducted by the permit holder within the dates specified in the permit and is subject to all other terms and conditions of that permit. For active movement through a grazing allotment outside of the terms and conditions of an existing grazing permit, see **Crossing**.

**Transmissivity:** The ability of a substrate (e.g., soil) to transmit water.

**Transportation system:** The sum of the BLM's recognized inventory of linear features (roads, primitive roads and trails) formally recognized, designated, and approved as part of the BLM's transportation system.

**Travel management areas:** Polygons or delineated areas where a rational approach has been taken to classify areas as open, closed or limited; and that has identified and/or designated a network of roads, trails, ways, and other routes that provide for public access and travel across the planning area. All designated travel routes within travel management areas should have a clearly identified need and purpose as well as clearly defined activity types, modes of travel, and seasons or time frames for allowable access or other limitations (BLM 2005).

**Trespass:** Any unauthorized use of **public land**.

**Tribal interests:** Native American or Native Alaskan economic rights such as Indian trust assets; resource uses and access guaranteed by treaty rights; and subsistence uses.

## U

**Unallotted:** Lands that are not currently permitted for livestock grazing use.

**Unconfined groundwater:** Groundwater that has a free water table; i.e., is not confined under pressure beneath relatively impermeable rocks (see also **Groundwater**).

**Unconsolidated material:** Sediment that is loosely arranged or unstratified, or whose particles are not cemented together, occurring either at the surface or at depth.

**Understory:** The plant community growing underneath the main canopy of vegetation, especially of a forest.

**Undeveloped (dispersed) camping:** Camping anywhere outside of a developed campground. Undeveloped camp sites do not have amenities such as toilets, picnic tables, or fire grates, and they may be designated by the BLM.

**Unplanned wildland fire:** An unexpected, non-structural fire in an area in which development is essentially nonexistent, except for roads, railroads, power lines, and similar facilities. Structures, if any, are widely scattered.

**Untrammelled:** Unhindered and free from modern human control or manipulation. The untrammelled quality of wilderness is degraded by manipulating “the community of life.” Examples of “trammeling” include spraying weeds, collaring wildlife, suppressing fire, lighting fire, stocking fish and wildlife, or killing predators.

**User conflict:** Jacob and Schreyer (1980) defined recreation or user conflict as goal interference that can be attributed to other recreational users. Using this definition, negative user interactions (conflict) occur when one visitor’s expectation or experience is diminished and that visitor can attribute the negative impact to another visitor’s behavior. See also **Recreation conflict**.

## V

**Valid existing right:** Any valid right that is immune from denial or extinguishment by the exercise of Secretarial discretion and was in existence within the boundaries of the D-E NCA when the D-E NCA was established on March 30, 2009. Existing rights are defined in Section 701 of **FLPMA** as any “valid lease, permit, patent, right-of-way, or other land use right or authorization” and must be in existence at the time of designation (BLM 2012b).

**Vegetation structure:** The stage of plant community development, encompassing age of stand, height of vegetation, and spatial distribution of plants.

**Vegetation treatment:** A planned alteration of a vegetation community to achieve desired resource objectives through using mechanical equipment, applying chemicals, seeding, releasing biological controls (e.g., insects), harvesting timber, using targeted grazing, and/or igniting planned fires.

**Vertebrate:** An animal having a backbone or spinal column, such as a snake, fish, bird, deer, or human being.

**Viewshed:** The panorama from a given viewpoint that encompasses the visual landscape, including everything visible within a 360-degree radius.

**Visitor conflict:** See **Recreation conflict**.

**Visitor use:** Visitor use of a resource for inspiration, stimulation, solitude, relaxation, education, pleasure, or satisfaction.

**Visual resource management (VRM):** The inventory and planning actions taken to identify visual resource values and to establish objectives for managing those values, and the management actions taken to achieve VRM objectives.

**Visual Resource Management Classes:** VRM classes define the degree of acceptable visual change within a characteristic landscape. A class is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective. Categories assigned to **public lands** on the basis of scenic quality, sensitivity level, and distance zones. Each class has an objective that prescribes the amount of change allowed in the characteristic landscape (BLM 2005). The four classes are described below:

- **Class I** provides for natural ecological changes only. This class includes primitive areas, some natural areas, some wild and scenic rivers, and other similar areas where landscape modification activities should be restricted.
- **Class II** areas are those areas where changes in any of the basic elements (form, line, color, or texture) caused by management activity should not be evident in the characteristic landscape.
- **Class III** includes areas where changes in the basic elements (form, line, color, or texture) caused by a management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
- **Class IV** applies to areas where changes may subordinate the original composition and character; however, they should reflect what could be a natural occurrence within the characteristic landscape.

**Visual Resources:** The visible physical features on a landscape, (topography, water, vegetation, animals, structures, and other features) that comprise the scenery of the area.

**Vulnerable Vegetation Communities:** See definition of **Imperiled**.

## W

**Watershed:** The area from which surface water, snow, or ice drains into a particular river, stream, basin, or sea; for example, the total area from which precipitation drains into the Colorado River is the Colorado River watershed.

**Way:** Road-like feature used by vehicles having four or more wheels but that is not declared a road by the owner and receives no maintenance to guarantee regular and continuous use.

**Western Association of Fish and Wildlife Agencies (WAFWA):** An organization representing 23 State and Canadian province fish and wildlife agencies. Founded in 1922, this association develops model policies and programs for member agencies.

**Wetland:** An area that is permanently wet or intermittently covered with water, such as a swamp, marsh, bog, pothole, swale, or glade.

**Wetland obligate species:** A plant, animal, or other organism that is found mainly in wetlands; for example, the southern maidenhair fern, which is found in Western Colorado seeps.

**Whirling disease:** An infectious and often fatal disease caused by a protozoan parasite of salmonids (salmon and trout), causing skeletal deformation and neurological damage. Affected fish “whirl” in a forward, corkscrew manner, rather than swim normally.

**White nose syndrome:** A high mortality disease affecting hibernating bats. Named for the white fungus that appears on the muzzle and other body parts of infected hibernating bats.

**Wild river:** A river or section of river that is free of impoundments and generally inaccessible except by trail, with essentially primitive watersheds or shorelines and unpolluted waters. Wild rivers represent vestiges of primitive America.

**Wild and scenic study rivers:** Rivers identified for study by Congress under Section 5(a) of the Wild and Scenic Rivers Act or identified for study by the Secretary of Agriculture or the Secretary

of the Interior under Section 5(d)(1) of the Wild and Scenic Rivers Act. These rivers will be studied under the provisions of Section 4 of the Wild and Scenic Rivers Act (BLM 2012c).

**Wilderness:** A congressionally designated area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that 1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; 2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; 3) has at least 5,000 acres or is large enough to make practical its preservation and use in an unimpaired condition; and 4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value (The Wilderness Act, Public Law 88–577, 88th Congress, September 3, 1964, Section 2(c)).

**Wilderness characteristics:** As stated in the Wilderness Act of 1964, wilderness characteristics include size, the appearance of naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation. They may also include ecological, geological, or other features of scientific, educational, scenic, or historical value. However, Section 2(c) of the Wilderness Act of 1964 has been updated by IM-2003-195, dated June 20, 2003. Indicators of an area's naturalness include the extent of landscape modifications; the presence of native vegetation communities; and the connectivity of habitats. Outstanding opportunities for solitude or primitive and unconfined types of recreation may be experienced when the sights, sounds, and evidence of other people are rare or infrequent, in locations where visitors can be isolated, alone or secluded from others, where the use of the area is through non-motorized, non-mechanized means, and where no or minimally developed recreational facilities are encountered.

**Wilderness study area (WSA):** A designation made through the land use planning process of a roadless area found to have wilderness characteristics as described in Section 2(c) of the Wilderness Act of 1964.

**Wildland fire:** A general term describing any non-structure fire that occurs in the vegetation and/or natural fuels. Wildland fire includes both wildfire and prescribed fire (BLM 2012h).

- Wildfire - An unplanned ignition caused by lightning, volcanoes, unauthorized and accidental human-caused fires and escaped prescribed fires.
- Prescribed Fire - Any fire intentionally ignited by management under an approved plan to meet specific objectives identified in a written and approved prescribed fire plan for which NEPA requirements (where applicable) have been met prior to ignition.

**Wildland-urban interface (WUI):** The line, area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

**Winter concentration area:** That part of an animal's winter range where individual species (e.g., mule deer, elk, etc.) densities are at least 200 percent greater than the surrounding winter range density during the same period used to define winter range in the average five winters out of ten (CPW 2010a).

**Withdrawal:** A withholding of an area of Federal land from settlement, sale, location, or entry under some or all of the general land laws to limit activity under those laws in order to maintain other public values in the area, reserve the area for a particular public purpose or program, or transfer jurisdiction of the area from one Federal agency to another.



**Dominguez-Escalante National Conservation Area  
Bureau of Land Management  
2815 H Road, Grand Junction, CO 81506  
(970) 244-3000**